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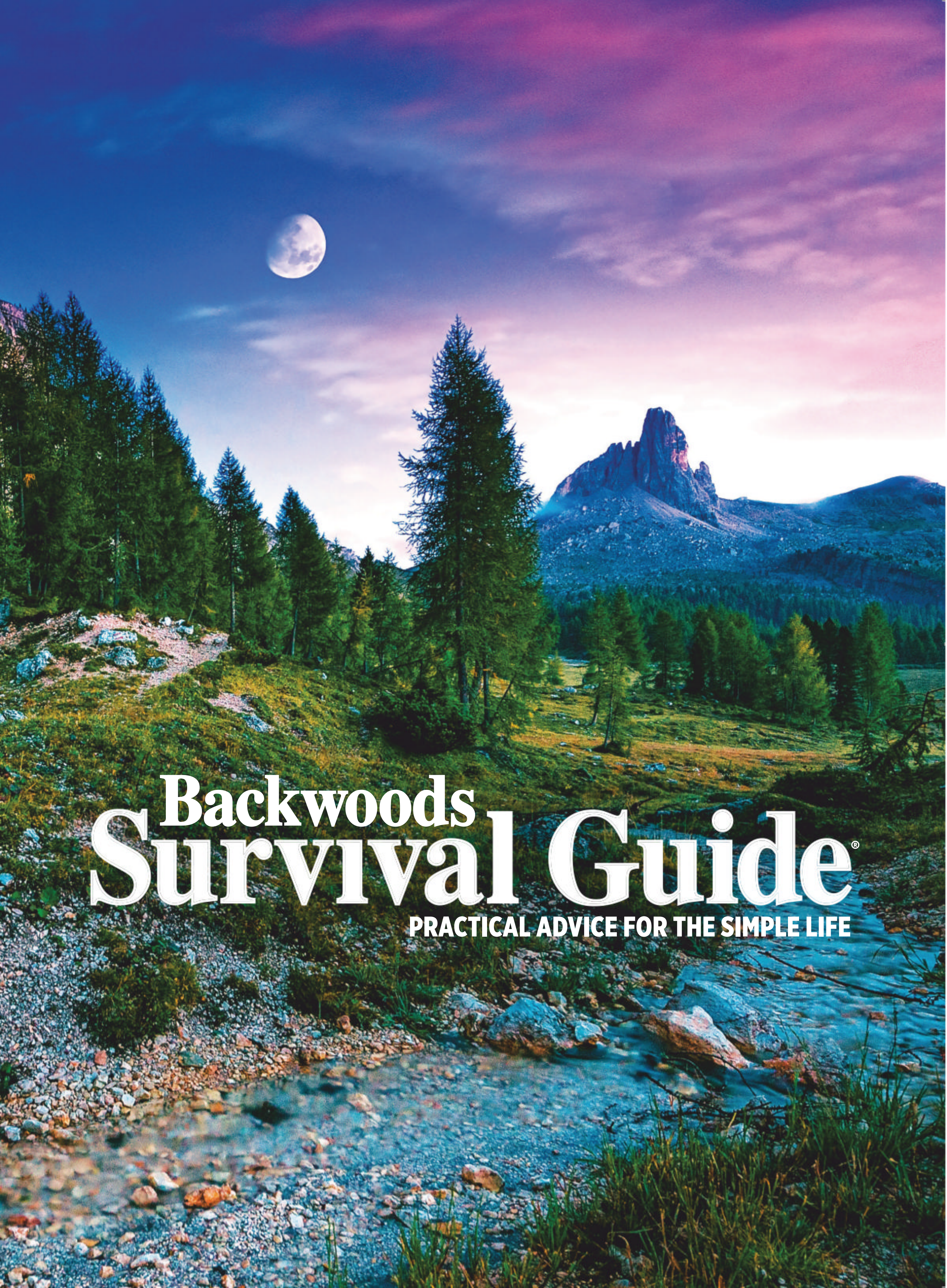

Backwoods Survival Guide®

PRACTICAL ADVICE FOR THE SIMPLE LIFE

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Letter From the Editor

Welcome to issue number 20! Whether you've been with us from the beginning or this is your very first issue, grab your favorite beverage and snack, then strap in as we have a lot to review. Here's just a taste of what you'll find between the front and back covers, perfect for the colder winter weather.

Dr. Joseph Alton gives us the nitty-gritty on how to prevent hypothermia, and what to do if it happens. Michael D'Angona shows us just how useful different species of trees can be, beyond only providing fuel for a campfire. Dana Benner dives deep into bartering to explain how it works in the real world. Angeline Hawkes goes into all the ways vinegar can be used around the house. Plus, learn some very interesting ways to use a ham radio from Aden Tate.

On top of that, we have a gear guide featuring tents and similar shelters. We're also covering home freeze-drying, measuring tools, solo travel and lots more. With every article, the goal is to provide you with practical, actionable information you can truly use.

Welcome to the Backwoods!

JIM COBB

The advice given in this magazine is the opinion of the author of each article based on their personal experiences and knowledge. The right response to a disaster may not be the same in all situations. Articles are for informational purposes only. The publisher accepts no responsibility for injuries or liability arising from relying upon information contained herein. In the event of an emergency, follow the advice of first responders and trained professionals. Have a preparedness plan researched from multiple sources and avoid high-risk situations. Follow all applicable federal, state and local laws for firearm ownership, carry and usage.

CHAPTER 1

OUTDOORS

BUNDLE UP, HEAD OUT AND HAVE FUN EXPLORING ALL THAT MOTHER NATURE HAS TO OFFER.

YOU NEED TO BE READY FOR WHEN TEMPS FALL AND THE SNOW AND ICE START TO FLY!

Head coverings like hats and balaclavas are great tools for preventing heat loss.

DON'T FREEZE

Help for dealing with frigid weather.

BY JOSEPH ALTON, MD

ON THE EASTERN ANTARCTIC PLATEAU, TEMPERATURES AVERAGE AROUND -137 F. IN DENALI, ALASKA, IT MIGHT GET AS COLD AS -100 F. YOU PROBABLY WILL NEVER BE IN CONDITIONS THAT FRIGID–BUT EVEN ON AN AVERAGE COLD DAY WHERE YOU LIVE, KNOWING HOW TO STAY WARM WHEN YOU ARE OUTDOORS CAN BE CRUCIAL TO YOUR SURVIVAL.

If you plan on spending more than a few minutes outside in the winter, you'll have to deal with the task of keeping your body temperature stable. Prolonged exposure to cold is more than uncomfortable—it can be downright dangerous. Here, we'll discuss what you should know about what can happen when you are exposed to the extreme cold.

HOW THE BODY LOSES ITS HEAT

There are various mechanisms that result in heat loss and, eventually, hypothermia. They include:

- **Respiration** Air is warmed when you breathe it in, especially through the nose rather than the mouth. That warmth is then lost when you exhale.

✖ **Evaporation** When you perspire, your body releases heat. Heat loss through evaporation increases in dry, windy weather conditions.

✖ **Radiation** You lose heat to the environment when the ambient temperature drops below 68 F. Much lower temperatures cause heat loss even more quickly.

✖ **Conduction** If your body comes into direct contact with cold temperatures (like ice or frigid water), you'll loses heat faster. Water, being denser than air, removes heat from the body much faster than air alone.

✖ **Convection** When a cooler object is in motion against the body core, such as wind, heat loss is inevitable. The thin layer of air next to the skin is heated and then removed. That requires the body to use more energy to re-heat itself. Wind chill is one example of air convection. If the ambient temperature is 32 F but the wind chill factor is 5 F, you'll lose the heat from your body as if it were actually 5 F.

HYPOTHERMIA

Prolonged exposure to cold temperatures can lead to hypothermia. It occurs when your body begins to lose heat faster than it is produced, and the core temperature drops below what's necessary for normal function and metabolism. A normal body core temperature is between 97.5–99.5 F. Below the core temperature of 95 F, symptoms related to cold exposure begin to appear. It's important to recognize the warning signs of hypothermia if you are out with others (or even alone), and to educate each and every family or group member as to the signs and symptoms.

SYMPTOMS

When its core temperature dips below 95 F, the body's inherent survival

Even if you don't want to wear it during the trip, keep a warm coat in your car, just in case.

mechanisms kick into action to try and prevent further heat loss. One way it does this is by a process called vasoconstriction. Blood vessels tighten to decrease flow to the extremities, which helps to conserve core temperature. When vasoconstriction fails to maintain a normal body temperature, the body will attempt to produce heat by muscle contractions—or what we call shivering. This will be the first symptom you're likely to see. As hypothermia worsens, more symptoms will become apparent if the patient is not warmed.

Aside from shivering, the most noticeable symptoms of hypothermia will be related to mental status. The victim may appear confused and uncoordinated. As the condition worsens, speech becomes slurred and the person will appear apathetic, lethargic and uninterested in helping themselves. They may even fall asleep. This occurs due to the effect of cooling temperatures on the brain; the colder the body core gets, the slower the brain works. Brain function is supposed to cease at a body temperature of about 68 F, although there have been exceptional cases where people (usually children) survived even lower temperatures.

When hypothermia sets in, you need to act quickly.

LEVELS OF HYPOTHERMIA

Although individual cases may present differently from each other, most sources recognize several different levels of hypothermia by body temperature:

Mild (93–97 F; 33.9–36.1 C)
A person with mild hypothermia will usually still be awake and alert, but shivering. Hands and feet will be cold, and they may complain of pain or numbness in the extremities. Loss of dexterity is often noted.

Moderate (90–93 F; 32.2–33.9 C)
In moderate hypothermia, mental status begins to suffer; efforts to produce heat by shivering may decrease or even stop.

Severe (82–90 F; 27.8–32.2 C)
The severely hypothermic person will stop shivering and mental status changes become clearly apparent. Expect to see confusion, lethargy and memory loss. The victim's muscles appear less flexible. They will be uncoordinated and speech will be slurred. An unusual apathy or denial regarding the seriousness of the situation is often noted.

Critical (Less than 82 F; 27.8 C)
Once below 82 F, the victim will likely be unconscious. Respirations will be impaired and the pulse slow and difficult to feel. Skin will be cold and cyanotic (blue), and muscles will be rigid. Pupils may be dilated.

TREATING HYPOTHERMIA

In general, you should assume that anyone encountered in cold weather with altered mental status is hypothermic until proven otherwise. Here are some important measures to take:

1 Get the person out of the cold. Transport them as soon as possible to a warm, dry location. If you're unable to move the person out of the cold, shield them as much as possible. Be sure to place a barrier between them and the cold ground.

2 In mild cases, it can help to do exercise to produce heat. With victims who are alert and can move without difficulty, mild exercise can help raise body temperature (as long as they stay dry). Avoid exertion in those with moderate hypothermia or worse, however, and in anyone with altered mental status.

3 Monitor breathing. A person with severe hypothermia may be unconscious. Verify that the patient is breathing and check for a pulse. If none, assume the patient is still revivable and begin cardiopulmonary resuscitation (CPR). Elevate the feet as you would for anyone in shock.

4 Remove wet clothing. Gently remove any wet garments and quickly cover the person with layers of dry blankets, including the head, but leave the face clear.

5 Share body heat. Although controversial, there may be circumstances when it's necessary to warm the person's body by removing your clothing and making skin-to-skin contact. Quickly cover both of your bodies with blankets. While this may seem inappropriate, it's important to remember that you're trying to save a life.

6 If awake and alert, give warm oral fluids. If, and only if, the affected person is alert and able to swallow, provide a warm, non-caffeinated beverage. Despite the image of St. Bernard dogs saving alpine mountaineers with casks of brandy around their necks, alcohol is a bad idea. Alcohol may give you a "warm" feeling, but it causes your blood vessels to expand. This accelerates heat loss from the surface of your body and negates the body's efforts to stay warm. Alcohol and recreational drugs also cause impaired judgment: Those under the influence might fail to dress appropriately for cold temperatures.

7 Use warm, dry compresses. First-aid "shake and break" warm compresses or warm (not hot) water in a plastic bottle will effectively apply heat to the body core if placed on the neck, armpit, chest wall or groin. Don't use hot water, a heating pad or a heating lamp directly on the person's skin. The extreme heat can damage the skin, cause strain on the heart and can even lead to cardiac arrest.

ANYTIME YOU VENTURE OUTDOORS DURING THE WINTER, YOU SHOULD BE PREPARED TO HANDLE HYPOTHERMIA SYMPTOMS.

PREVENTION

An ounce of prevention is worth a pound of cure. To prevent hypothermia, you must anticipate the climate that you will be traveling through, including current temperature, wind conditions and rain or snow. Condition yourself physically to be fit for the challenge. Travel with a partner if at all possible, and have enough food and water available for the entire trip.

It may be useful to remember the simple acronym C.O.L.D., which stands for Cover, Overexertion, Layering and Dry:

- **Cover** Protect your head by wearing a hat. This will avoid the loss of body heat from your head. A surprising amount of heat is lost from the head area, due to its large surface area. Mittens are more helpful than gloves in protecting your hands, because they keep your fingers in contact with one another, conserving heat.

- **Overexertion** Avoid activities that cause you to sweat a lot. Wet, sweaty clothing accelerates the onset of hypothermia. Rest when necessary and frequently self-assess for cold-related changes. Pay careful attention to those members of your group who are older or young children.

- **Layering** Loose-fitting, lightweight clothing in layers do the best job of insulating you against the cold. Add or subtract layers as needed. Use tightly woven, water-repellent material for wind protection. Wool or silk inner layers hold body heat better than cotton. Some synthetic materials, like Gore-Tex, Primaloft and Thinsulate, also work well.

✖ **Dry** Keep as dry as you can. Get out of wet clothing as soon as possible. It's very easy for snow to get into gloves and boots, so pay particular attention to your hands and feet.

Hypothermia can kill even the most rugged survivalist. Dress appropriately, make shelter and keep warm. If you can accomplish these goals, a harsh winter will be just a bump on the road, not the end of the road.

Joseph Alton, MD, is a physician, author and medical preparedness advocate. His award-winning guides include *The Survival Medicine Handbook, 4th Edition*, and *Alton's Antibiotics and Infectious Disease*. Find his 1,200 articles, podcast and videos at doomandbloom.net.

Wet, sweaty feet should be dried out at the earliest opportunity.

BE PREPARED TO LIGHT IT UP

Know how to get a fire going fast.

✖ Starting a fire with a bow drill is an impressive ability to have, but when you need to get a fire going quickly, it's smarter and simpler to have a lighter or some waterproof matches in your pack.

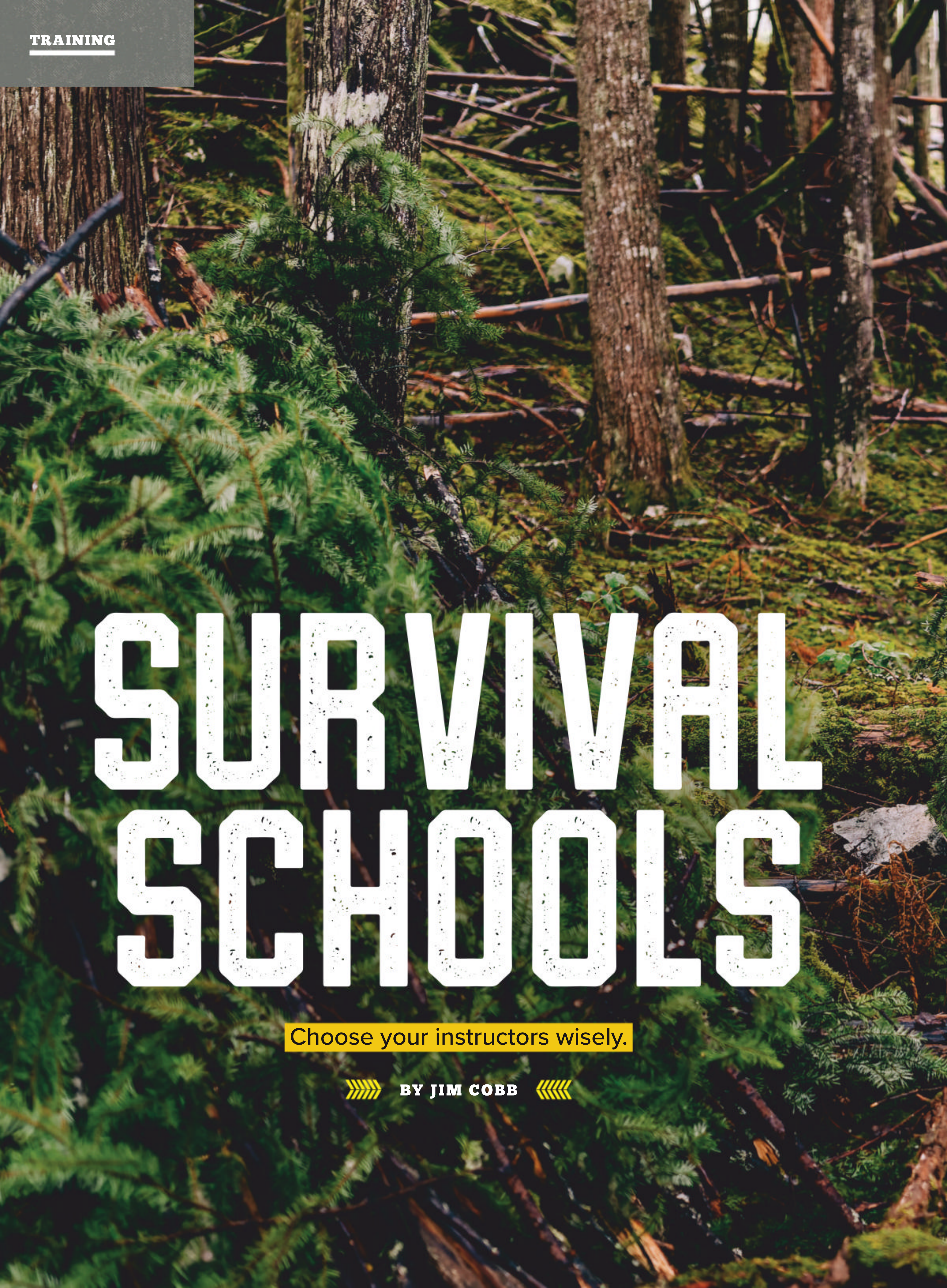
✖ But that's not the only important thing to keep on hand. Cold weather is often wet weather, and whatever is available outdoors may be difficult to ignite. Having a tinder kit in your pocket or a plastic bag will make your job so much easier. Besides various commercial kindling products, items like rope fibers, teased-out cotton balls or even dryer lint will work. Add some petroleum jelly to improve the burn time further.

✖ If things are wet and you didn't bring tinder material, shredded birch or cedar bark underlayers may also work. A standing dead tree, once the outer surface is removed, may have dry wood inside.

✖ If you didn't bring a lighter or matches, you absolutely should have an emergency flint and steel.

✖ First, shave off bits of the magnesium component onto a pile of tinder. Scrape the steel striker downward on the flint to create a spark. The magnesium will burn at thousands of degrees, which helps even in wet conditions. Digging a small hole for your kindling on windy days will serve as a shield.

✖ If you don't have a lighter, matches or an emergency flint, don't panic. Snacks in your backpack with oil in them, like potato chips or other snack chips, or items like waxed paper, will ignite easily as well and can help you get that fire going so you can start to get warm.



SURVIVAL SCHOOLS

Choose your instructors wisely.

BY JIM COBB

HANDS-ON PRACTICE WILL QUICKLY SHOW YOU WHAT YOU'RE DOING WRONG!

Learning by doing is one of the best ways to acquire many of the skills needed to prevail in an emergency.

HERE AT *BSG*, WE'RE OBVIOUSLY BIG FANS OF BOOK LEARNING. WE STRIVE TO BRING TO YOU INSTRUCTORS WHO AREN'T JUST WELL-VERSED IN THEIR SUBJECT MATTER, BUT ARE ABLE TO COMMUNICATE ALL OF THE INFORMATION CLEARLY THROUGH THE WRITTEN WORD.

But as great as studying and even watching videos can be, many people want to attend some type of in-person classes. There are many skills that are best learned through face-to-face teaching, such as identifying wild edibles, building shelters and navigation. The hands-on training goes a long way to establishing the knowledge and skills.

However, attending a class is a big investment in both time and cost. In addition to the class itself, you need to account for travel to and from the school's location.

What can you do to ensure you're not going

Spending time on the trail has numerous benefits, including physical fitness as well as learning new skills.

to be wasting your time or your money? Here are some suggestions for what to consider when choosing a survival school.

LOCATION

One of the first considerations is where the classes will take place. Travel isn't cheap, whether you fly or drive. You may also need to factor in how much time it will take to get there and back, as you may need to take time off work.

Another reason why location matters is that learning survival techniques that apply in a desert environment, for example, might not translate all that well if you live in the upper Midwest. While I'm a big fan of learning for the sake of learning, as a practical matter it makes more sense to concentrate on skills and topics that you're most likely to be able to use in the areas you live and work most often.

REPUTATION

Always take the time to research the school and the instructors and read reviews. Granted, you sometimes have to take reviews with a grain of salt, as there is always

ALWAYS DO YOUR HOMEWORK AND CHECK OUT AN INSTRUCTOR BEFORE YOU HAND OVER ANY CASH OR MEET THEM ANYWHERE.

The first time you make fire can be an incredible experience.

the chance of some sort of ulterior motive behind an individual review. Perhaps the person didn't hit it off with the instructor, or they just didn't mesh well, which can happen in a class just as it does elsewhere in life.

That said, be wary of the cult-like following that can develop with some schools and teachers, where every word they utter is treated as gospel and any criticism can be misinterpreted or scoffed at. Well-meaning, rabid followers sometimes end up doing far more harm than good. And instructors who encourage such behavior might not be ones you want to get involved with, as they sometimes tend to be more focused on stoking their own egos than they are interested in truly teaching.

FORMAT

This one is very subjective, as it comes down to the type of class you desire. Some people prefer a very hard-core, experiential class that has a distinct military sort of feel. Others might be looking for a more laid-back program, with as much laughter and fun as actual learning. Many probably seek some sort of middle ground, where there's definite challenges to overcome, but without someone hollering at you the entire time.

Many schools today offer some sort of video classes, whether streaming or through an app. If that's the case, you might check one of them out, as it'll give you a good idea of what to expect from the instructor(s) on site.

PREREQUISITES

Make sure to read the course information in detail before signing up so you're aware of any special requirements. For example, if you're fairly well-versed with wilderness survival, you might want to reach out to the school to discuss it before you leapfrog over their first-level course and sign up for the advanced one. You might find that what they cover in the introductory class is already a bit more involved than your experience level.

Along these same lines, be sure you're physically capable of what you'll need to handle during the course. If you have health issues that might inhibit your ability to handle hiking or other strenuous activity, talk to the school well ahead of time and see if there are accommodations that can be made or perhaps they might suggest a different course that's better suited for you.

GEAR AND EQUIPMENT

One more expense involved with taking a class is investing in the supplies needed. Depending on the course, this could be a fairly extensive list. Among the more common items:

- Knife
- Folding saw
- First-aid kit
- Tourniquet
- Water filter
- Water bottle
- Pack or knapsack
- Wool blanket
- Bush pot
- Eating utensil

While these are things that many of us have on hand just as a matter of course, for those just starting out, putting together an extensive kit before you even leave for the class can be daunting (and expensive). Some schools do offer loaner equipment on a limited basis, so it might be worth your while to inquire if that's a possibility for you.

Along these same lines, depending on the

KNOWING WHAT TOOLS TO TAKE WITH YOU WILL HELP YOU PREPARE FOR THE CLASS.

It can be costly to attend a class or to purchase the necessary supplies and gear, but the lessons learned will usually pay off in the end.

BE SURE YOU HAVE A SOLID GRASP OF WHAT YOU ARE AND ARE NOT ALLOWED TO BRING TO THE CLASS WELL BEFORE YOU LEAVE.

course content and length, you may have to provide your own food, whether it is calories you pack in or those you obtain in the wild. It is important that you know ahead of time what you're expected to bring in that regard.

TOPICS COVERED

Naturally, you'll want to know what you can expect to learn in a given class or course. If you're seeking information on how to use wild plants medicinally, you're not likely to get into that a whole lot in a beginner-level general wilderness survival course. You will, however, gain a great foundation upon which to build your skill sets.

While most instructors welcome questions during the class, don't try to steer the content too far afield. Many classes are packed with information that must be covered in order to move on to the next segment, and slowing the class down by trying to get into topics that aren't scheduled isn't going to go over well with your fellow students.

Most of us can't afford to just take umpteen classes until we find the right combination of instructor and content that suits our needs. By doing homework ahead of time, you'll be able to make an informed decision as to where to train.

Learn how to use a tourniquet properly.

SCHOOL'S IN SESSION

Check out these options.

From time to time, I'm asked about survival schools. Here are ones that I personally endorse. I've either worked with the instructors or I'm familiar enough with their qualifications that I can recommend them without hesitation. There are dozens of other schools out there, but these are a few I trust.

Nature Reliance
Kentucky
Naturereliance.org

Campcraft Outdoors
Kentucky
Campcraftoutdoors.com

Advanced Survival Training
Virginia
Advancedsurvivaltraining.com

School of Self-Reliance
California
Schoolofself-reliance.com

Ancient Pathways
Arizona and Colorado
Apathways.com

Fieldcraft Survival
Utah
Fieldcraftsurvival.com

Gray Bearded Green Beret
Classes offered throughout the U.S.
Graybeardedgreenberet.com

STRIPPING TO THE STUMP

The forest-dwelling multi-tool.

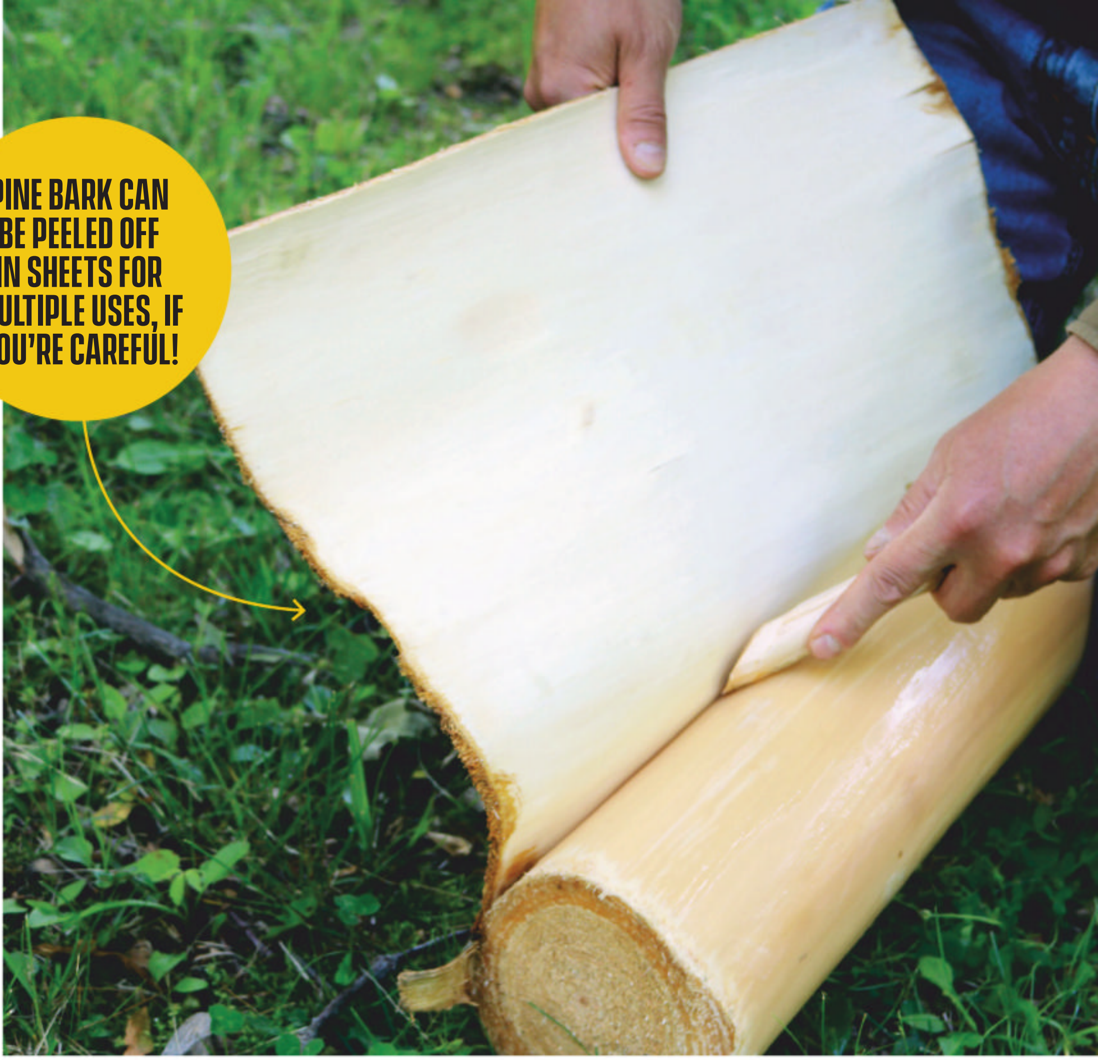
BY MICHAEL D'ANGONA

These towers of leaves and branches can be incredibly useful as well as beautiful.

IT'S SAFE TO SAY THAT EVERYONE KNOWS WOOD MAKES EXCELLENT FUEL. IT'S A KNOWN RESOURCE, NOT THE MOST DIFFICULT TO PROCURE AND EVEN A NOVICE CAN MANAGE TO CREATE A SIMPLE FIRE THAT CAN PROVIDE WARMTH, COOK FOOD OR GIVE COMFORT.

However, what most people may not realize is that a tree's other parts can also be used for a number of purposes when out in the deep woods. From shelter to fire accelerators, to creating tasty teas, to providing warmth and insulation, it pays to be aware of some of a tree's not-so-obvious offerings.

Here, like an illegal chop shop, we'll break down a tree into its usable, and at times lifesaving, parts. You'll learn how to access them easily, and, most importantly, relay their usefulness when deep in nature, so you'll never be entirely resource-free if you are in the woods.



PINE BARK CAN BE PEELED OFF IN SHEETS FOR MULTIPLE USES, IF YOU'RE CAREFUL!

WHICH TREES WORK BEST?

Hands down, the best trees to "strip" for their parts are evergreens, specifically, conifer trees. These include pine, spruce and fir (think Christmas trees). Additionally, non-evergreen trees, such as willows, maples, oaks and birch, can be exploited for their specialized resources. There is no such thing as a jack-of-all-trades tree, meaning that one tree cannot meet all of your desired needs while you are in the outdoors. However, when you can identify a number of useful trees in your surrounding area, you can pull assets from each one.

MORE THAN FIREWOOD

Of course, it must be noted that the wood from nearly any type of tree can be used for firewood. Wood that is continually added to a fire on a cold night can keep you alive by supplying warmth and by cooking freshly killed game so you can safely eat it. However, the branches can offer other benefits that some people may not realize. A large bundle, slightly larger than your frame and piled on the ground, can insulate you from the heat-sapping cold of the earth below you. Hypothermia is a very real and very deadly condition that can occur when you sit or sleep directly on the ground. Thick boughs can prevent this and add some cushioning beneath you. Additionally, live or very green evergreen boughs tossed on top of a steady fire can create white smoke plumes that can be used for signaling passing aircraft or on-foot search parties.

> TAKE SOME TIME TO PRACTICE HARVESTING AND USING THESE RESOURCES WELL BEFORE YOU MIGHT NEED TO RELY ON THEM.

FOOD AND DRINK

Some may assume if a tree doesn't produce fruit of some variety, it can't be used as a food source in the wild. This is not correct at all. In fact, a tree can provide substantial sustenance when you're in a pinch and very hungry. Overall, the best tree of choice for salvaging

a food source is a pine tree, as well as other conifers. You can utilize the bark as a food source by converting it into a flour and then baking it in a pan, or on a flat, hot rock if you're limited with gear or supplies. First, you need to reach the inner layer, called the phloem. This material is white or off-white in color and is located against the tree's interior wooden core. It contains starches and sugars and is a great source of nutrients and much-needed fiber. To reach this valuable food source, use your knife to cut through the layers of bark until you reach the more durable and harder inner wood. Then slide a flat tool (ax, hatchet or flat shovel) and peel back the layers of bark. The layer closest to the interior wood is the best for eating. Once harvested, you need to either pan fry it, to produce pine "chips" of a sort, or dry roast it and pound it into flour as mentioned above.

Bark from other trees, including maple, birch, elm and ash, among others, can also be used as a food source. Additionally, pine trees produce pine cones, of course, which house tasty pine nuts that can be eaten raw or roasted over a fire. The best method is to roast the entire pine cone over a fire and, after cooling, tap them on a hard surface; the seeds should easily fall out.

Other food sources from trees include their leaves, which can be tossed into a salad or even picked off a branch and eaten as-is, as well as the flowers of certain trees (such as the eastern Redbud) that contain antioxidants and great flavor.

A word of caution: Not all trees are edible. Some are considered toxic, and others have parts that are either less than appetizing or simply difficult to digest. Be sure to carry a tree manual with you or do some extensive training before you decide to feast on a tree's offerings.

After you enjoy your food courtesy of the silent giants of the forest, you'll want to wash it all down. For this purpose, a cup of pine tea may be exactly what you need. This warm and inviting beverage can be created using pine needles and some very hot water (boiling it first is best). To make this tea, chop up about a tablespoon of needles from a fir, spruce or pine tree (avoid loblolly pine and ponderosa pine as they may be toxic to consume) and add the needles to the boiling water. Allow it to sit, covered, for about 10 minutes, and then strain the needles and enjoy. If you have any natural sweeteners like honey or maple syrup, you can add a small amount to sweeten the beverage.

Pine nuts can be harvested and eaten without much effort.

Tea made from pine needles is tasty and very nutritious.

Conifers like pine and fir are among the most beneficial to us when we're out in the wild.

YOUR SUPPLY CENTER

Aside from food, drink and firewood, a tree can become a veritable drug store when you have nowhere else to turn. In order to protect itself from infection if damaged, pine trees secrete resin that can be utilized for numerous applications. It can be used as a natural antiseptic for cuts or scrapes, act as an anti-inflammatory to keep swelling down and help to close open wounds with its natural stickiness. To make a pine pitch salve, you need to heat the sap (though not directly or it could ignite). Use a double boiler until it becomes a liquid, strain any debris and then mix with olive, vegetable or any kind of oil available over steady heat and you're good to go.

Additionally, resin can be used to waterproof your footwear so a waterlogged sock won't be a constant problem as you trek through wet territory. It can also be used to make repairs on a variety of items like footwear, boats with small holes, slight openings in your shelter and so forth. Think of it as Mother Nature's glue-all. Heat the resin until it becomes workable and then coat on all applicable surfaces.

IN PRAISE OF FATWOOD

Even dead trees can be useful.

When you travel in bushcraft and survival circles, you'll sometimes hear references to fatwood, also called fat lighter, lighter knot, or lightr'd. This is one of nature's greatest fire starting resources, and if you find a source for it, it is wise to scavenge some for later use.

What Is Fatwood?

When a pine tree dies or is cut down, all of the sap in what's left of the tree seeps back into the heart of the stump. The sap contains terpene, which is a naturally occurring hydrocarbon. Over time, the sap solidifies and imparts a great deal of natural rot resistance to the wood. The end result is what we call fatwood.

How Is It Used?

This sap-impregnated heartwood is extremely flammable and, if prepared properly, will light from even a small spark. Use your knife or other sharp implement to shave the fatwood and create a small pile of fatwood slivers and dust. Light that with a match, lighter, or ferrocerium rod. It is almost waterproof and will burn hot even in wet conditions.

Where Can I Find It?

To locate fatwood, look for old pine stumps that have mostly rotted away, leaving just a core remnant. Fatwood is found at the center of the stump, and you'll probably have to clear away more dead wood to find it. You'll know it by the strong smell of turpentine. It'll be hard and might be difficult to pry out, but work at it for a bit and you'll be rewarded.

Resin is also highly flammable, and as such, you can use it as a resource for both light and to some extent warmth. To utilize it, find a vessel to hold the resin, such as an empty can, curved stone or clamshell. Fill it with resin, add a small piece of cloth to the surface to act as a wick, and light it up. Surprisingly, it will give off enough light for you to see in your immediate area. To create a makeshift heater, place a metal vessel, with punched holes throughout, over the candle and the heat will be conducted by the metal canister and dispersed for you to keep warm.

Trees can also be a good source of natural cordage in the wild. Willow trees produce vine-like flexible branches that can be woven into a number of objects, from a basket to a fish trap to usable cordage for shelter construction. Long strands of peelable bark can be rolled and then braided into cordage, and flexible, just-on-the-surface roots can be an ultra-strong source for a variety of purposes like traps, baskets, shelter restraints and more. Plus, weaving cordage from natural materials isn't difficult.

Pine bark can be shaped into a bowl to hold berries, among other campsite items.

MORE THAN MEETS THE EYE

A tree is essentially one large stick of firewood and perhaps a few other resources. But with a bit of research, you can increase a tree's uses in ways you have never imagined. Not all trees produce the same benefits, but once you become proficient in identification of the species and the resources that species offer, you're well on your way to understanding that a tree can be the multi-tool of the forest.

Pine pitch can be used as an antifungal, antibacterial, antiseptic and anti-inflammatory ointment.

Michael D'Angona is an experienced martial arts instructor, survival skill practitioner and writer for numerous nationwide outdoor, self-defense and weapon-centric magazines. He continually learns new and diverse techniques, as well as tests new equipment in the field.

BE A ROAD WARRIOR

A guide for taking an epic trip alone.

BY KRISTOPHER TRIANA

FEW EXPERIENCES ARE MORE EXCITING AND REWARDING THAN HITTING THE OPEN ROAD. FROM THE LIGHTHOUSES OF MAINE TO THE MAJESTY OF THE GRAND CANYON, AMERICA OFFERS STUNNING VISTAS AND TRULY UNIQUE EXPERIENCES, WITH SO MUCH VARIETY IT ALMOST FEELS LIKE YOU'RE VISITING OTHER COUNTRIES OR, IN THE CASE OF NEVADA'S VALLEY OF FIRE, OTHER PLANETS. BUT WHILE ROAD TRIPS OFFER TRAVELERS A GREAT DEAL OF FUN, THEY ALSO POSE CHALLENGES.

Traveling solo can sound scary, but it is a lot of fun.

Hitting the open road with friends can make for a memorable vacation, but road tripping as a solitary adventurer (or, in my case, with a canine companion) is an experience unmatched by other journeys. I spent three weeks on the open road with my Labrador retriever, searching for the best hiking trails across 17 states. Here, I'll explain how to prepare yourself for the road ahead.

MENTAL PREPARATION

Before taking a solo road trip, ask yourself if you have what it takes to spend long stretches of time alone in unfamiliar places. Traveling solo is intimidating. Are you ready to get yourself out of jams unassisted? Can you self-navigate? Do you enjoy solitude or do you get lonely easily? Self-reliance is crucial to the success of your adventure, so be honest with yourself as to whether you're ready to go it alone.

One way to beat the loneliness is to bring a pet with you—preferably a dog, in my opinion. Canines enjoy adventure as much as humans and can participate in hiking and other off-road experiences along the way. Just make sure you keep their needs in mind as well as your own. Make frequent stops so they can relieve themselves, drink water and sniff around.

A dog makes for the best road trip companion.

America offers a variety of beautiful landscapes.

Colorado
Utah
Arizona
New Mexico

Pick a destination and just go for it.

PREPARE YOUR VEHICLE

Fully service your vehicle before taking any long trips. Change the oil, check the belts, top off all fluids, check tire tread and pressure (use snow tires in winter) and do a thorough check of all lights. The landscape you'll be visiting may differ greatly from that at home. Ask yourself if your car can handle mountain inclines, torrential rains and blistering heat. If not, you may want to rent a vehicle that can match your plans.

PRIORITIZE YOUR STOPS

Before traveling, make a list of destinations and arrange them in the order you plan to visit. Measure out the mileage between stops, arranging them in a way that doesn't involve backtracking. Anything can happen that might slow you down, so prioritize the stops you want to see most. If you plan to see five destinations, be prepared to only get around to two or three.

One way to outline your trip is to break it down by state, then arrange a route through each one. When calculating your travel time, allot for time spent at each destination. Do you plan to just stop and take a photo at the Four Corners or are you going to walk around the surrounding desert too?

Check the status of each location beforehand. Some national parks are closed in the winter. You wouldn't want to drive across the country just to find out your hiking destination is closed due to ice. Carlsbad Caverns is an incredible sight, but they don't allow dogs. Neither do many beaches. Much like road closures, the status of your destinations should be checked each morning so you can alter plans as needed.

KEEP COSTS DOWN

Set a budget and stick to it. The cost of travel is high these days, so do what you can to increase gas mileage. You may be tempted to bring along everything you could possibly need, but the lighter you travel, the less gas you'll use. Stick to the necessities and use the GasBuddy app to find the best gas prices in any area.

Instead of eating out, make your own meals with a hot plate. Rather than spend your nights in hotels, bring a tent and find campgrounds, or even sleep in your vehicle. Book everything well in advance to take advantage of early bird discounts.

Car camping is one way to reduce expenses as you travel.

SUPPLIES

What you bring will depend not just on where you're going, but when. You'll need ice cleats to hike somewhere in winter but waterproof socks to hike that same place in the summertime. In California, you may need sunscreen by day and a coat by night. No matter what your plans are, I recommend bringing along the following items.

✖ **Cooler, Hotplate With 12V Option and Frying Pan** This will heavily cut down on food costs.

✖ **Camping Shovel** Even if you don't plan on camping, a collapsible shovel can help dig your tires out of the mud and snow, and is generally a handy tool to have.

✖ **Sleeping Bag, Blanket and Inflatable Mat** You never know where you're going to have to call it a night.

✖ **Hunting Knife** You'll be surprised how often you'll use it.

✖ **First-Aid and Roadside Emergency Kits** Include jumper cables, flares, snow scraper (even in the summer, to scrape off mud), glass cleaner, rain poncho and motor oil. You can always pick up automotive items you might need along the way, but in an emergency, these items are crucial.

✖ **Battery-Powered Lanterns and Fire Starters** Provide yourself with light and heat when needed.

✖ **Portable Phone Charger** You won't always have somewhere to plug in.

✖ **Entertainment** Audiobooks, podcasts and playlists can make those 10-hour treks much more enjoyable.

✖ **Gas Can** A full one—in case you run low in the middle of nowhere.

BE YOUR OWN GPS

A GPS is designed to get you where you need to go as quickly and easily as possible, but road trips are about the adventure of going as much as arriving. While apps like Road Trippers can be handy for kitschy stops, bringing along paper road maps is an excellent way to navigate the countryside and take the roads less traveled. State welcome centers often offer these maps free of charge or for a small fee.

You should also be able to find your own way if your GPS signal fails. Always bring a compass—not the one on your phone, but a real compass. Be sure you know how to use it properly and always trust it. In dire situations, it just might save your life. Additional skills for navigation include learning to follow the sun and the ability to locate the North Star, which you can teach yourself with survival books or online searches. No one plans to get lost in the woods. It's better to know how to find your way out without a phone.

TRAVEL WISELY

Even if it doesn't seem bright out, wear sunglasses to keep your eyes from getting tired. Always double-check your load to be sure it's secure and nothing is left behind. Use cruise control sparingly to stay engaged and never use it in poor weather. Check travel conditions before driving (weather, road closures) and always stay above a quarter of a tank of gas.

STAY SAFE

Even though this is a solitary journey, let a family member or friend know where you'll be going. Always get enough sleep before heading back out on the road. Stay off your phone while driving and pay close attention to your surroundings. Watch for potholes and anything that could damage your vehicle. The farther away from home you get, the more costly it will be to get your wrecked car back to your house. Watch for reckless drivers and don't be one yourself. Don't follow other cars too closely and don't be a speed demon (a ticket will take a big bite out of your budget). Make sure you know how to pass correctly, including when and where you can do it. You might

Phones are great for keeping in touch on your trip, but don't rely on them to get you around the woods.

not be as good at this as you think, so refresh yourself with a DMV driver's guide.

Never let your schedule rule you. It's best to take a break every three to four hours. If you're tired, pull over and rest. Even if you can't find a rest stop, use a parking lot for a nap. It's better to lose time than risk an accident.

It's nice to meet new people along your journey and experience different cultures. Folks in Provo, Utah, are a lot different from the people you'll meet in Santa Cruz, California; Tupelo, Mississippi; or Boston. But while having a conversation is generally safe, following someone into their motel room might not be. The loneliness that comes with solo traveling can sometimes cloud our common sense. Don't take risks on the road. Also be cautious of wild animals. Depending on where you're going, you may want to add bear spray to your supplies.

Bring along healthy snacks and drink plenty of water. Remember that gas station treats are a good way to upset your stomach and keep you off the road, so instead choose nuts, jerky and fruit, and stay hydrated throughout the day. Avoid excessive amounts of coffee and energy drinks. A little caffeine might help wake you up but too much of it will make you sick and cause insomnia. And of course, never abuse drugs or alcohol while driving.

ALWAYS LEAVE A TRAVEL PLAN WITH SOMEONE YOU TRUST, SO IF YOU GET INTO TROUBLE, THEY'LL KNOW WHERE TO GO.

STOP AND SMELL THE ROSES

Take the back roads. State roads offer rolling countryside and unique villages. Take the time to stop at that dusty old '50s diner. Pull over to see The World's Largest Shovel. Visit the filming location of one of your favorite movies.

It's your trip. Enjoy it.

PULL OVER!

Unique destinations for the adventurous travelers: Don't miss these attractions if you are in the area.

✖ **Big Texan Steak Ranch, Amarillo, Texas** Home of the 72-ounce steak (finish it and it's free!), this legendary steakhouse is off historic Route 66.

✖ **The Forks, Maine** Northern Maine is the perfect summer destination. White water rafting, scenic drives and waterfalls are a few of the treats that await.

✖ **Garden of the Gods, Shawnee National Forest, Illinois** Incredible vistas await you on these Midwestern hiking trails.

✖ **Hocking Hills State Park, Ohio** One wouldn't expect rolling mountains and gorges in Ohio, but Hocking County delivers breathtaking landscapes and serious hikes.

✖ **Lake Placid, New York** Located in the Adirondacks, it's beautiful all year, and is very dog friendly.

✖ **Painted Desert in the Petrified National Forest (and the Four Corners)** Stand in Utah, New Mexico, Colorado and Arizona at the same time. Then journey on to the Badlands to see the Painted Desert in Arizona, featuring brilliant colors, including lavender rock formations.

✖ **Sedona, Arizona** Mesmerizing canyon walls, red-rock buttes and expansive pine forest await you in northern Arizona. The climate is also much milder than you might expect.

✖ **Timpanogos Cave, Utah** Why hike over a mountain when you can hike through it?

✖ **Valley of Fire, Overton, Nevada** A natural red sandstone preservation covering nearly 46,000 acres. The park was used as Mars in the 1990 film *Total Recall*.

Kristopher Triana is an award-winning novelist and screenwriter. His work has been published in multiple languages and has appeared in many anthologies and magazines. A dog trainer since 2014, he has worked with all breeds on obedience, agility courses, dock diving and much more. Find his books at trianahorror.com.

CHAPTER 2

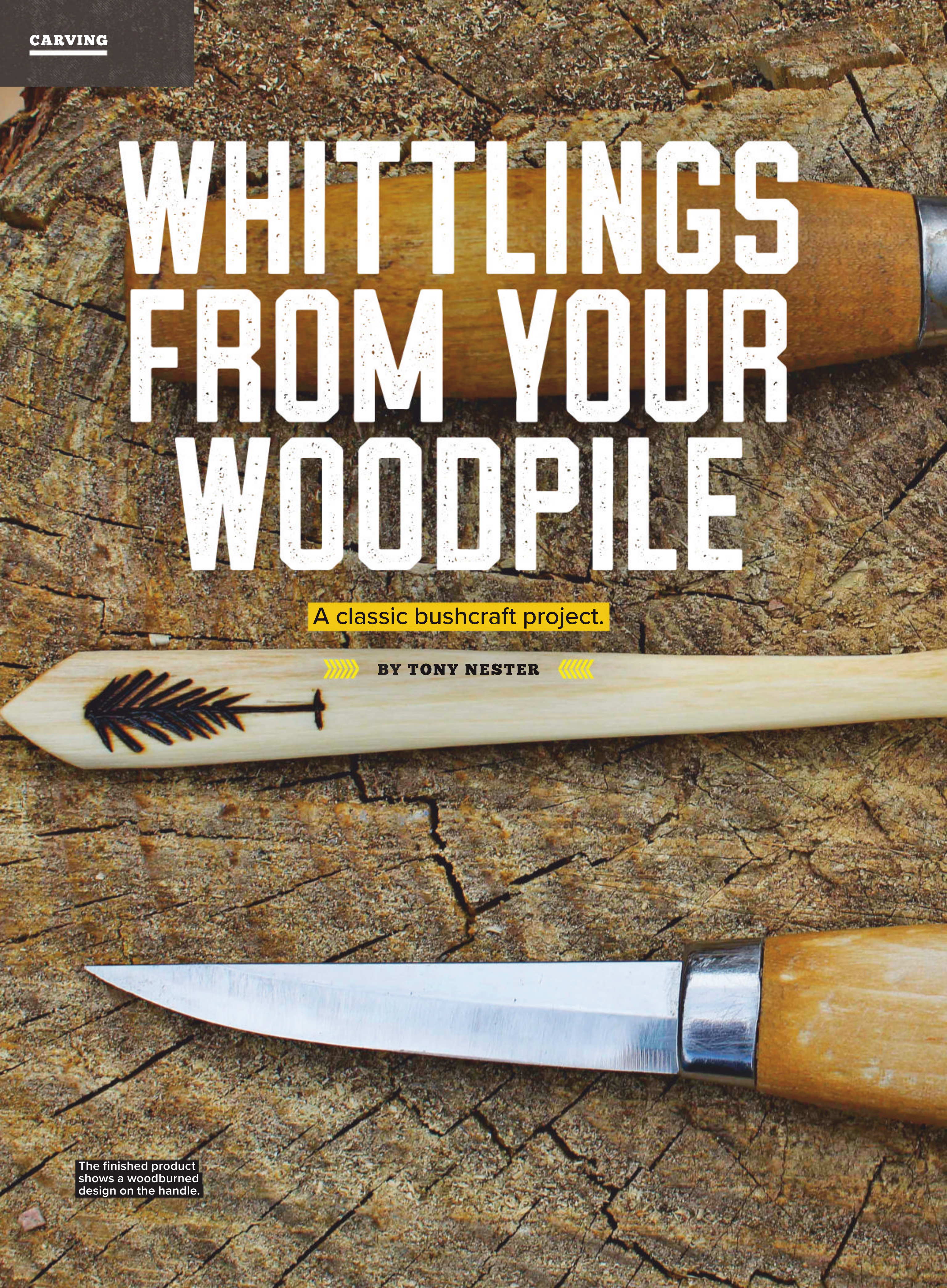
HOMESTEADING

SELF-RELIANCE CAN BE A LOT OF WORK, BUT THE REWARDS MAKE IT WORTH ALL OF THE EFFORT.

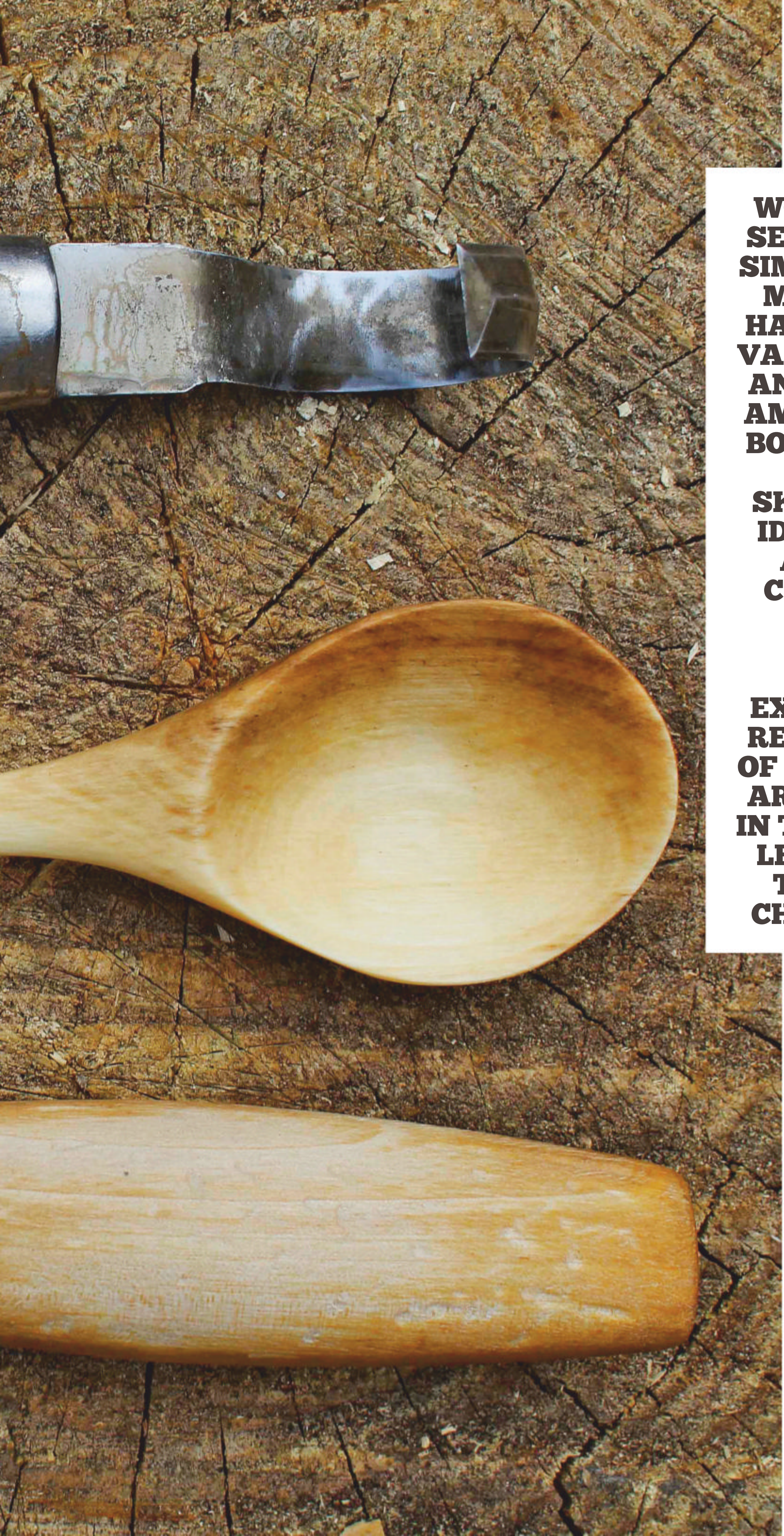
WHITTLINGS FROM YOUR WOODPILE

A classic bushcraft project.

BY TONY NESTER



The finished product shows a woodburned design on the handle.

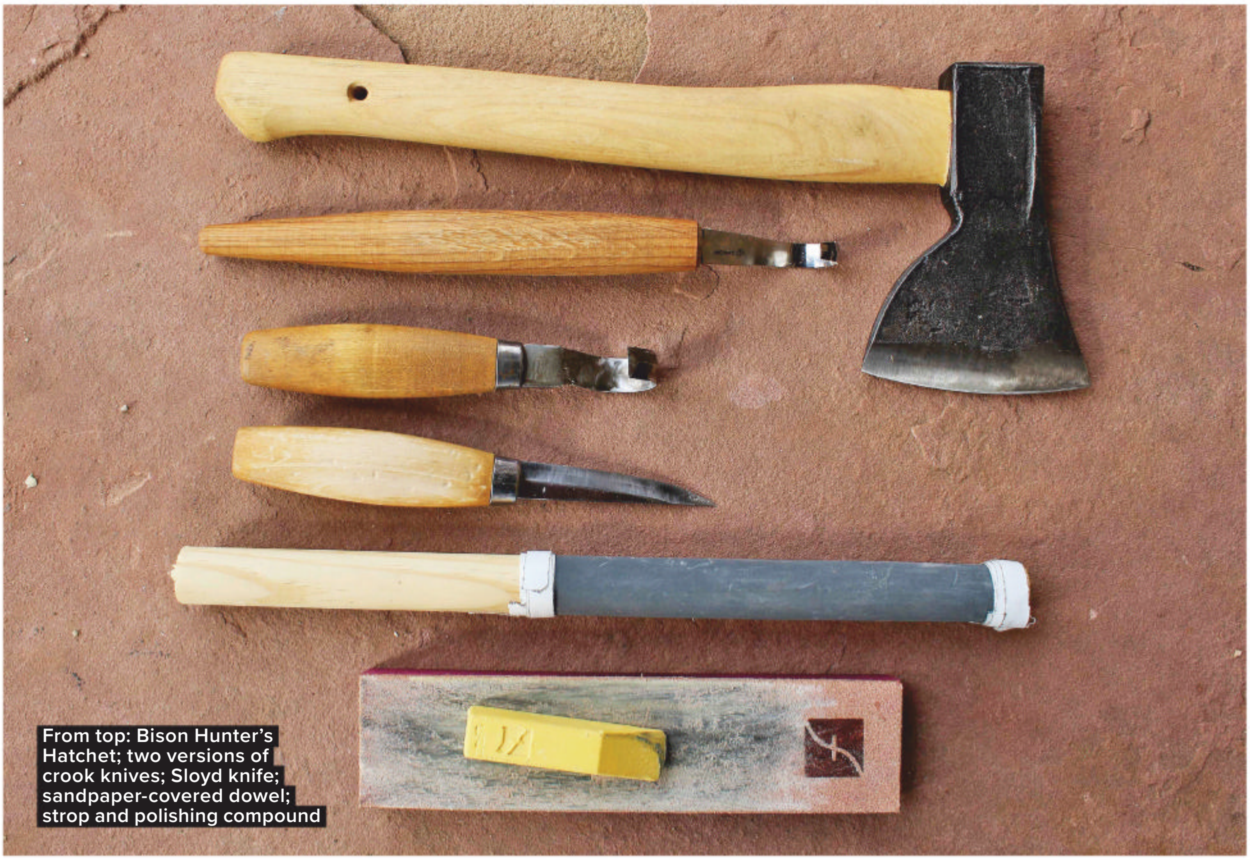


WOODEN SPOONS SEEM LIKE FAIRLY SIMPLE ITEMS, BUT MAKING ONE BY HAND INVOLVES A VARIETY OF SKILLS AND TECHNIQUES. AMONG THEM ARE BODY MECHANICS, SHARPENING SKILLS AND TREE IDENTIFICATION, ALL OF WHICH CAN BE APPLIED ELSEWHERE IN YOUR WOODCRAFT EXPERIENCE. AND REMEMBER: A LOT OF FUTURE SPOONS ARE JUST SITTING IN THE SCRAP HEAP LEFT OVER FROM THE FIREWOOD CHOPPING BLOCK.

The best thing is that you only need three simple tools to get started, and no special workshop setups are required. This means you can do most of the work pretty much anywhere, from home to out on the trail.

AX

You'll need an ax for the initial splitting of the log to fashion the spoon blanks and for large-scale removal



From top: Bison Hunter's Hatchet; two versions of crook knives; Sloyd knife; sandpaper-covered dowel; strop and polishing compound

around the handle section. A quality ax, like a Gränsfors Bruks Small Forest Ax ($230; amazon.com) or a Bison Hunter's Hatchet ($62; amazon.com), are two to consider. Couple this with a solid chopping block (like a tree stump) and you'll soon be ready to bang out a few spoon blanks.

SLOYD OR MORA KNIFE?

For over 15 years, I used a $12 Swedish Mora Classic for whittling, until getting a Mora 106 Sloyd (about $23; amazon.com), which excels at fine carving. The Sloyd is now my go-to knife, as its slender design and fine edge make it a superior blade for fine reduction work. Both of these blades are made from high-carbon steel, which is typical of the steel found in carving tools and which makes for an easy-to-sharpen edge. Frankly, once you obtain a Sloyd, you likely won't want to go back to using anything else.

THERE ARE A COUPLE OF SPECIALIZED TOOLS THAT WILL MAKE THE JOB EASIER, AS WELL AS MORE EFFICIENT AND ENJOYABLE.

CROOK KNIFE

This is an essential tool with a convex shape for hollowing spoons, cups and kuksas. There are several companies that make commercial crook knives (also called hook knives); I prefer the Mora 162 model ($30; amazon.com), which is double-edged. The Beavercraft Company also has a package containing a Sloyd and crook knife kit (about $13; amazon.com). Higher-end designs created with outstanding craftsmanship include Ben Orford, Cariboo Blades and Kestrel Tool.

One other item to consider, especially for beginners, is a pair of cut-resistant safety gloves. These were developed by the culinary industry for professional chefs and provide excellent hand protection. NoCry and ChefsGrade make inexpensive kitchen gloves for around $15.

KEEPING YOUR BLADES SHARP

Unless you are working with super-dense woods like mesquite, oak or hickory, you will only need to hone your cutting edges for every half-hour of carving. Carbon-steel blades like the Moras, crook knives and Sloyds generally need a touch-up with a leather strop and a polishing compound.

The crook knife will require a little extra work on the strop, given its inherent curve. I also have a special tool made from a ¾-inch dowel rod covered with double-sided tape that has a layer of 600-grit sandpaper over it. I also have several finer rods with 1200-grit and 2000-grit sandpaper for the finishing touch.

If I'm doing a carving class and have blades that see a lot of punishment, then I may put them through a more rigorous sharpening process, beginning with a Japanese water stone and working up to the finer grits to remove any nicks before finishing with the strop and compound.

SPOON DESIGN 101

Frankly, you could take a split piece of wood and shave it flat, remove the burrs and round the edges and you would have a field-expedient food paddle for getting the grub from your bowl to your mouth. Or you could easily whittle a set of chopsticks. But carving an artistic wooden spoon is what elevates whittling into woodcraft and the finished product will be both pragmatic and something of which you'll be proud, whether you keep it for yourself or give it away.

The easiest way to make a symmetrical design is to simply take a favorite spoon from your kitchen drawer and trace its pattern onto the wood blank. Or look up some of the amazing designs on Instagram from the many professional carvers and spoons that have been displayed at international meetings.

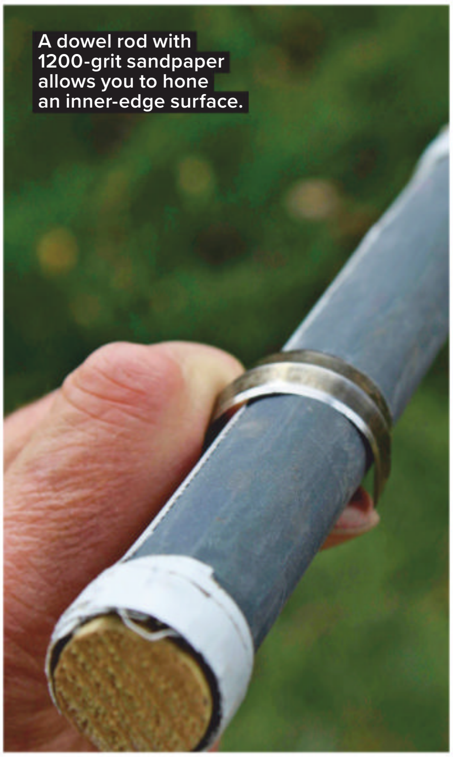
I prefer to stick with simple patterns, although I occasionally do some woodburning or kolrosing to add designs to the handle. The latter involves etching a pattern into the wood with the tip of a knife, then grinding dry coffee grounds into the grooves—something like a poor man's scrimshaw.

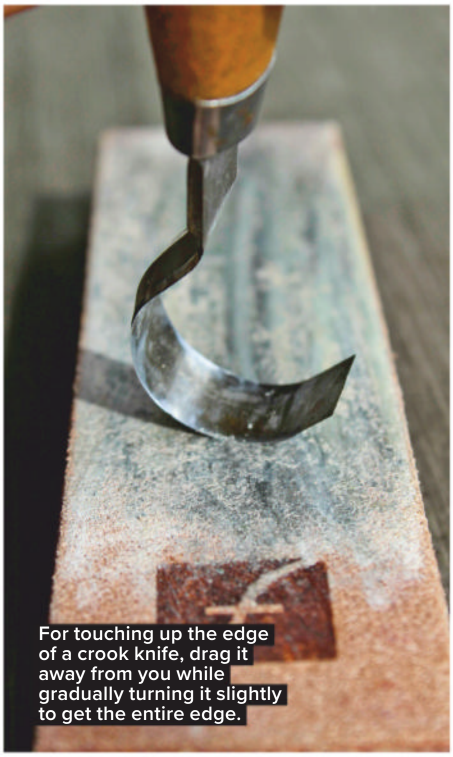
It helps to draw a centerline in the middle of the spoon's depression, which will serve as a visual guide for where the deepest portion will be located.

CARVING METHODS

Using an ax, split a small sapling or log in the 2- to 4-inch range until you have several finger-thick sections, then block out each piece to remove the thin edges. After that, flatten both sides to eliminate ridges and bumps. The next part involves penciling in your design, using a piece of charcoal or a pencil. You can do this freehand, with a cardboard template based upon one of your existing kitchen spoons or with a compass and ruler.

After stenciling in the design, pull out the ax again and remove the surplus wood around the handle and the bowl portion. Remember,


A dowel rod with 1200-grit sandpaper allows you to hone an inner-edge surface.


For touching up the edge of a crook knife, drag it away from you while gradually turning it slightly to get the entire edge.

this is just the rough-shaping phase; the coming bladework stage is when you'll do the real sculpting.

Next, using the Mora or Sloyd, begin whittling along the pencil lines to bring your spoon to life. This is the most time-consuming part, but it is also the artistic side of spoon-making, so go slow and enjoy the process. What really separates a nice spoon from a clunky one is the time spent refining the neck and configuration of the bowl. These little touches add flair and a nice curvature to what would otherwise be a blocky scoop.

Lastly, hollow out the interior using the crook knife. This involves different body mechanics than the knife and you will use more wrist action to scoop out the wood rather than an arm action as you did with the Sloyd. Start by using small strokes, then progress around the bowl, watching the way the grain affects your strokes. This latter part can be frustrating in the beginning, until you learn to "read" the wood. I always tell my bushcraft students that their first spoon is going to look a lot different from their fourth spoon.

When you are content with the interior of the bowl, use light passes of the crook knife to remove any small burrs from your previous work. Then go back and finish up the handle to create the shape you desire and clean up the outer edges of the bowl portion.

Keep in mind knife safety at each step: Unless you work with a blade a lot, always carve away from yourself; when sitting, rest your forearms on your knees to avoid carving near your femoral artery; watch out for the blast radius so you don't inflict a wound on your fellow campers; and keep your tools sharp, which will require less force and fewer clumsy hand movements. The last thing you want is an injury that will require medical attention.

FINISHING AND SEASONING

Once you are pleased with the basic shape, take your spoon through the gamut of sandpaper, starting at 80-grit and working up to 600-grit. After this step is when you will do any kolrosing or woodburning.

Lastly, I like to soak my finished spoons in a bowl of mineral oil overnight. I have used pure tung oil (which hardens when exposed to air, giving the spoon a glossy look), jojoba oil, walnut oil and others, but prefer mineral oil as it's tasteless and inexpensive. Plus, I give away my spoons as gifts throughout the year and don't want to worry about someone inadvertently suffering from nut allergies with the other aforementioned oils.

I live in an arid region and find that it's necessary to re-season my wood utensils several times a year or more, depending on use.

If you want to become proficient at spoon-carving, split a log into sizable sections, and make a spoon every day for a week. Your carving skills will progress very quickly, your time outdoors will increase and you will have a wealth of gifts ready to go!

Tony Nester is the author of the new book *Knife-Only Survival*, available on Amazon.

CHOOSING THE RIGHT WOOD

Pick your material carefully, as it will affect the quality of the final product.

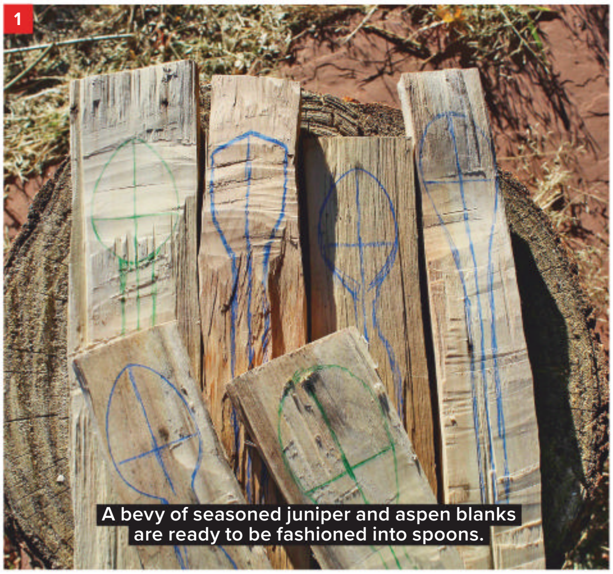
- I really enjoy working with the wood from fruit trees like apple, mulberry, cherry and pear because of the durability and beautiful grain patterns. In the springtime or after a storm, I'm always on the lookout for pruned limbs. Other woods to consider are maple, birch, walnut, olive and aspen.

- Avoid resinous woods like pine and spruce, because the residual sap can leach out of your spoon into that hot bowl of soup or cocoa. The exception with resinous trees is very old, seasoned wood that has sat out in the elements for years, allowing the resin to be purged.

- If you are new to carving, try starting with cottonwood, willow, poplar or aspen, which are easier to work than harder woods. You can also buy pre-seasoned basswood or tupelo carving blocks at Michael's or Woodcraft, either of which will get you started and are great for showing children how to carve.

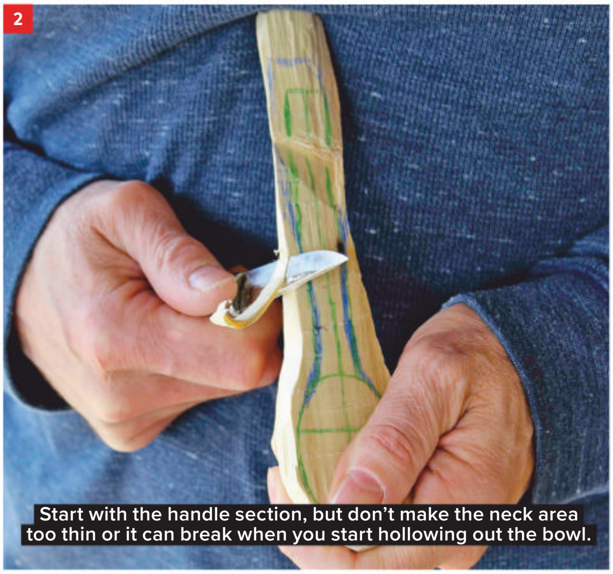
- As for using green or seasoned wood, either will work, but green is far easier to utilize. You just have to make sure that when your spoon is completed, you let the wood dry in a controlled setting for a week or so to allow the moisture to slowly escape; this will help prevent cracking. I usually put my green spoons into a brown paper bag with wood shavings and close it up, rotating the spoon once a day over the next week.

1



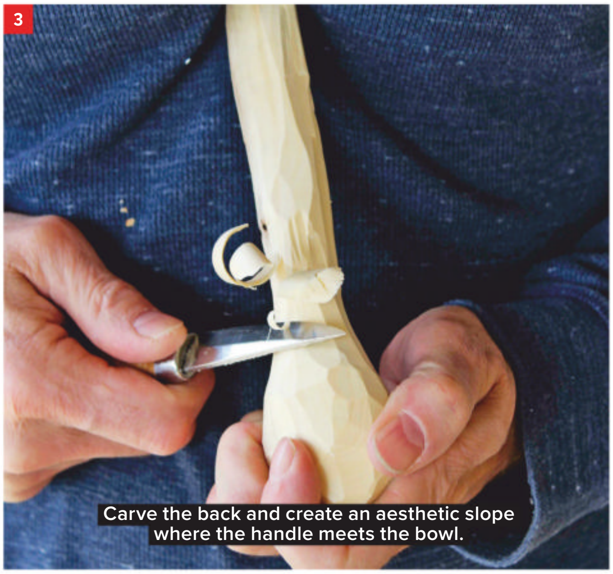
A bevy of seasoned juniper and aspen blanks are ready to be fashioned into spoons.

2



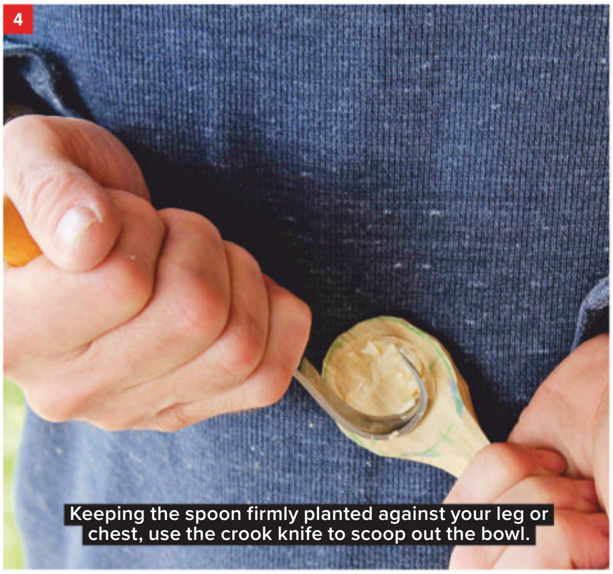
Start with the handle section, but don’t make the neck area too thin or it can break when you start hollowing out the bowl.

3



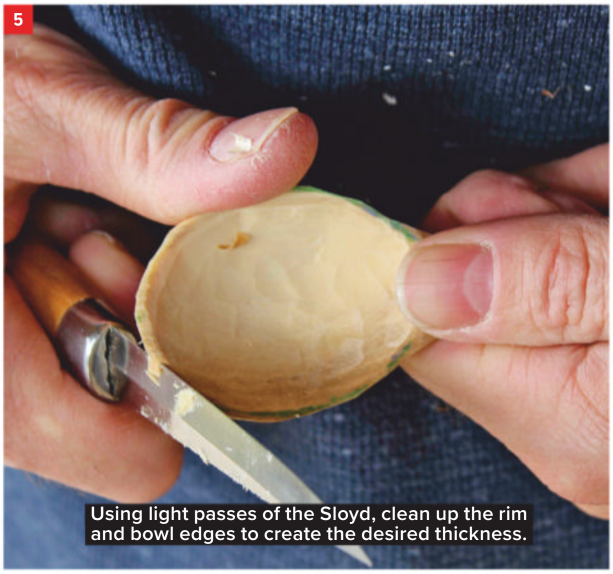
Carve the back and create an aesthetic slope where the handle meets the bowl.

4



Keeping the spoon firmly planted against your leg or chest, use the crook knife to scoop out the bowl.

5



Using light passes of the Sloyd, clean up the rim and bowl edges to create the desired thickness.

6

The nearly completed spoon is ready for sanding, then seasoning with oil.

DIY FREEZE-DRYING

Is it worth the investment?

BY JASON HUNT, PHD

IN THE PAST FEW YEARS, A NEW KITCHEN GADGET HAS BEEN THE TALK OF THE TOWN ON PREPPER SOCIAL MEDIA, WITH LOADS OF QUESTIONS ABOUT WHETHER THE COST IS JUSTIFIABLE AND HOW WELL IT WORKS FOR SMALL-SCALE HOMESTEADERS.

You're able to store a lot of food in a small space with this method.

YOU CAN PRESERVE ALMOST ANY TYPE OF FOOD WITH A FREEZE DRYER AND A LITTLE TIME!

Since investing in a home freeze dryer several months ago, I believe I can now share an informed opinion as to whether or not it is worth the investment. I will also offer a handful of quick-start tips to help you on your journey to food security.

Initially, I was very reluctant to invest in a freeze dryer. With a small model starting at $2,395, it's a cost that takes serious consideration for the average family. With four children and many visitors frequenting my home, I felt that a medium-size machine would better suit my needs, and thus far, that has proven to be a good decision. The meals we typically prepare pair perfectly with the medium freeze dryer, which offers four stainless steel trays that can hold up to 2 pounds of food per tray.

It's common to find freeze dryers online for a special rate or commercial or pharmaceutical-grade machines for sale. While these machines will technically work with some hacking, the standard home variety is the best choice for the average consumer. Select a machine based on how you cook or your family size. If you're not used to making 10 or 12 pounds of food at a time, you'll

The author put together an insulated room specifically for the freeze dryer.

find yourself getting frustrated at trying to fill a large machine to get ahead. Harvest Right states that you can average around 312 freeze-dried gallons of food per year with the medium machine. That's 62 five-gallon buckets for a better mental picture. I agree that this is possible if you run food batches daily.

DO YOUR HOMEWORK

You will inevitably feel compelled to join freeze-drying groups on social media before investing in a machine, to learn the pros and cons of freeze-drying. But this is not something that I would recommend. Instead, find a good YouTube channel dedicated to freeze-drying, such as Retired at 40 or Practical Prepper, along with Harvest Right's own channel.

I am against Facebook groups on this journey because they often seem discouraging, and the majority will bash you hard for asking novice questions already answered within the group. I was a member of a dozen high-profile groups before I ordered my machine, and they almost talked me out of it due to the sheer number of complaints I saw. Once I took the plunge, I was so anxious about the issues continually reported among the groups that I never even turned my machine on, wrestling with the idea of returning it. In fact, I didn't make a run of food for the first two months that I had this device. Finally, I decided I should at least try it before my warranty expired. Once I did, I realized every issue that was a central pain point within the groups was operator error. In 18 months, I have never had a problem with my machine other than temperature warnings that the machine issued due to using it in an outdoor building.

FOODS TO PROCESS

There are over 100 food types you can freeze-dry, and I'm not counting dry goods. The secret to freeze-drying meats is to trim the fat. Fats, foods with high sugar content and oils do not freeze-dry well, at least not for long-term storage. Freeze-drying removes up to 98% of the moisture in foods, giving you the best possible shelf-life while maintaining the original nutritional value. Cooked and raw foods can be freeze-dried, along with drink mixes, butter, eggs and of course, ice cream and yogurt.

Beyond long-term food storage ideas, freeze-drying offers an income opportunity. Many owners piggyback on the tail end of food runs to create freeze-dried candies such as Milk Duds, Skittles, gummy worms and Jolly Ranchers. These candies only need to be heated under vacuum pressure to change their consistency to crunchy treats that sell amazingly well at farmers markets and boutique shops.

LOCATION

You'll want to place your machine somewhere where you can tolerate noise and maintain a reasonably even temperature year-round for the best result. The machine is about as loud as a window air conditioner, but the vacuum pump adds to that noise, even on newer pumps. The freeze dryer isn't something you'll want in the family room during movie night. Basements, garages or insulated rooms in outbuildings work well. I made an insulated room in an outbuilding with 4x8 insulation panels. I added a window air conditioner for the summer months and a space heater for the winter. I've not had an operational issue. If you utilize the machine with a daily food batch, you can expect your electricity bill to increase by several dollars per month. In my rural area, running a few batches per week, I could only tell a difference of a few dollars per month. It all depends on how much you'll be doing on a regular basis.

MAINTENANCE

Vacuum pump selection is a central talking point within the freeze-drying community. I opted for the basic pump when I made my purchase, which required me to change the pump oil every four or five food cycles. Changing the oil takes around a minute and did not seem to be too much of a hassle considering the $700 savings at the time. Harvest Right now offers the premier pump as the standard option, an upgrade from mine. The premier pump still requires regular oil changes but is quieter and offers a better range of fluctuation for operating temperatures. This means you will have greater flexibility when running the machine in a breezeway or garage. Pump oil is expensive, but the good news is you can filter and reuse your pump oil. There is also an oil-free pump that does not require oil changes but is a $1,495 upcharge.

Add a little water and you'll be scarfing down lunch or dinner in no time.

Freeze-dried fruit is a great trail snack.

As food costs continue to increase and supply chains remain less dependable, achieving food security and independence is greatly enhanced with a home freeze-dry machine. You will minimize your food waste, save your entire garden harvest and you can store a more fantastic, healthier variety of food that you already eat for many years to come. While it's certainly not a definitive answer for securing a solid long-term food supply, it's a great tool. We are delighted that we decided to procure a freeze dryer for our family, and I believe you will too, should you choose to make the same decision.

Jason Hunt is the owner of Campcraft Outdoors (campcraftoutdoors.com), a survival school and manufacturer of handcrafted waxed canvas bags in Bethlehem, Kentucky. He's the author of *Bushcraft First Aid* with Dave Canterbury and spends most of his time training future outdoor instructors.

TIPS AND TRICKS

Increase your odds of success.

Over the last several months, we've learned through trial and error what works and what doesn't. Here are some pointers as you start out on your freeze-drying journey.

Regulate the Room Temperature Machines operate best between 45 F and 75 F. Your functional area may require additional heating or air conditioning to maintain a safe operating temperature. Abnormally high or low temperatures can cause damage to your vacuum pump and machine.

Practice Safe Food Handling Keep your area and tools cleaned and disinfected as a best practice in mitigating food freshness and safety issues. Ensure you do not cross-contaminate food during preparation or freeze-drying. Precooked, frozen food you make yourself eliminates most consumer-reported problems with home freeze-drying.

Stock Up on Supplies
You will want a variety of sizes of both oxygen absorber and mylar bags, depending on how you plan to store your food. Dry canning is also an option. You can keep your freeze-dried foods in your canning jars with oxygen absorbers; protect them from light to ensure nutritional integrity.

Get a Brita Filter Pitcher
This allows you to filter your pump oil to reuse it indefinitely. You can use toilet paper or coffee filters to plug up the filter tube of the Brita to separate your oil from food debris and water trapped within the oil. Many great videos demonstrate this process online.

Pre-Freeze Everything
Pre-freezing your food will help to speed up your freeze-drying process and keep certain foods from making a mess of your machine. Never place frozen and unfrozen foods together in the machine simultaneously because one will inevitably explode, creating a mess to clean up.

Save on Costs Leftovers, canned goods and foods nearing expiration all freeze-dry the same, so use them to save amid rising food costs.

One-Pot Meals for the Win
Fill your slow cooker or crock pot daily with a new meal to freeze-dry. I always have one meal cooking with another meal in the freezer being staged for entry into the machine. One-pot meals make life easier for quickly building up your supply with family favorites.

Clean Your Machine
After every handful of cycles, clean your machine. Finding standing water after defrosting with food debris in the back of the drying cylinder is normal. I use a pump shim to lift the frontof my machine slightly during defrosting to eliminate this issue so I can adequately clean my machine between runs.

Cook Big Prepare an extra steak or three, save that pizza, and go ahead and make extra baked potatoes. It's all stuff to be put into the machine. Plan for special meals fit for a king so that you have a bountiful treat for the family when a crisis occurs.

Don't Overcomplicate Things Once you dive into freeze-drying, you'll learn about software updates, hacks and other manipulations. The majority of it is a waste of time. Keep it simple, stay focused on building your supply and enjoy the ride. This advice will also keep you from messing up your machine.

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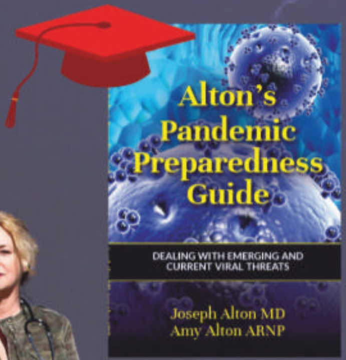
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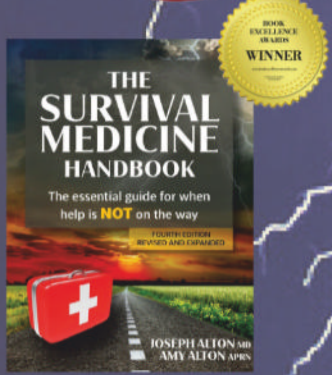
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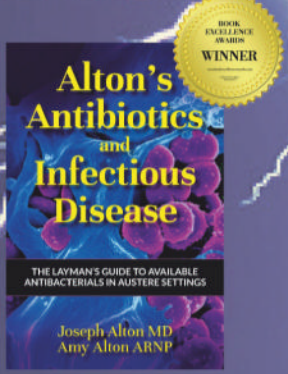
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ALL OUR KITS ARE HSA & FSA
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STRETCH YOUR RESOURCES

Swapping this for that.

BY DANA BENNER

INFLATION IS HITTING US ALL AND MONEY DOESN'T SEEM TO GO AS FAR AS IT ONCE DID. AROUND OUR HOMESTEAD, WE HAVE BEEN TRADING THIS FOR THAT FOR AS LONG AS I CAN REMEMBER. IN TODAY'S AGE OF RISING COSTS, IT IS A CONCEPT MORE OF US SHOULD ADOPT. WHILE NOT EVERYONE HAS CASH TO SPARE, WE ALL HAVE SKILLS OR ITEMS THAT CAN BE USED TO OBTAIN OTHER THINGS WE MAY NEED.

HONEY IS A VERY VALUABLE COMMODITY THAT CAN BE EASILY TRADED.

Build relationships with those around you to get what you need.

The concept of bartering, which is simply exchanging something you have in surplus or skills that you may possess for items that you need, has been around since long before there was such a thing as money.

I will use a recent bartering exchange I accomplished as an example. The ramp to my shed needed to be replaced. I asked my friends to see if any of them had any 4-foot 2x4s around that they would be interested in exchanging for some of my tomato plants. One friend did, and the deal was made. This was a win/win situation and the transaction didn't cost either of us one red cent. He had the wood from a job he did a few years back. For me, because I always keep seeds, I had extra plants available. This deal saved my friend from purchasing his tomato plants and it saved me money, not only regarding the cost of lumber, but also the cost of my fuel and time to get it.

The great thing about bartering is that no money is exchanged and there are no taxes involved. There are no set prices, no discounts or specials. Everything is based on honesty and deals are closed with a handshake; forget contracts or warranties.

WHAT IS A GOOD DEAL?

As long as both parties are happy at the end of the day, every deal is a good one. When bartering, you have to try to take the idea of money out of the equation, which for some people is hard to do. If you have a surplus of anything, and it has been sitting on the shelf or in the shed for a year and hasn't been touched, then it really has no value to you. In fact, those unused items could be costing you money. But it could have a value to someone else, making it a prime candidate for a barter.

Here is another example. My friend sold his .30-30 rifle, and what he thought was all the ammunition for it, a few years ago. Recently, while cleaning out his ammo locker, he found a few more boxes. Obviously, the ammo was of no use to him, but he knows that I hunt with a .30-30 rifle, so he asked if I was interested in the ammo. Of course I was, and I had just the right items to exchange. I knew he was into bass fishing so I offered him a few boxes of lures. He agreed that it would be a good deal; we both got something we needed and got rid of stuff we weren't using. Did the items match up equally as far as monetary value goes? Probably not, but we were both happy.

Just like when using currency in a store, don't always jump at the first deal that comes along. You will want to shop around, weigh your options and think about what you need to give up (unless the deal has been prearranged). By the same token, if the item you are trying to get is hard to find, and it is a vital piece important to the operation of your homestead, you will need to jump on it when you find it.

You might try to coordinate garden plans with neighbors to increase everyone's bounty.

ONLY BARTER THINGS YOU DON'T NEED

Don't barter away items that you may need later. I see this happen often. In the world of homesteading and self-sufficiency you need to think long-term. Yes, you may need a certain item now, but if you barter something that you may need a month or two later then you really are not ahead of the game. That being said, remember that you also don't want to hold on to items for too long. Think logically with every deal.

There are certain items that I will never use in a barter situation, but I will use other things to barter for them. Hand tools, like crowbars, shovels, metal tined rakes and saws, are indispensable around the homestead, so they always stay put. The same goes for fuel, whether it is gasoline, propane, wood or charcoal. These items keep the homestead running. Keep in mind that I am talking about everyday sorts of bartering, not survival bartering. These are two entirely different things and should never be confused. Believe me, in a survival situation I would never hesitate to barter away a little fuel for food if my family needed it.

Items that are great for everyday bartering are those that you produce yourself. Products such as honey, maple syrup, alcohol, vegetables, plants, seeds and wood are all items in demand. If you knit, sew, work with wood or have other skills, you have services that people are willing to barter for. How about those items you have after you update your gear? How many backpacks does one person need anyway?

Not everyone can sharpen knives well, so this can be a great skill for bartering.

VALUE IS SUBJECTIVE WHEN IT COMES TO BARTERING. AS LONG AS ALL INVOLVED ARE HAPPY, THAT'S WHAT MATTERS.

DON'T CONFUSE WANT FOR NEED

This often happens and when it does it can lead to some bad deals. You may want the latest and greatest chainsaw—but do you really need it? Does your current chainsaw work just fine? What do you have to give up in order to obtain that new chainsaw? Could the items you gave up have been better used to secure firewood for the upcoming winter or for extra food?

Another key point: Unless it is a survival situation, only deal with people you really trust. Stick to family and friends. If it is someone new to you, check with others to see if they have ever dealt with the person in question. Never be afraid to walk away if something doesn't feel right or you don't agree with the terms. Always trust your instincts.

PITFALLS

As good as bartering is, like with everything else, there are some pitfalls that you need to be aware of. Keep in mind that despite what we all would like to think, not everyone you may deal with is honest. Make sure the item you are bartering for is what you expect. There are no guarantees and no refunds. Sometimes what you thought was a good deal doesn't turn out that way. Maybe it was the wrong item for the application, or maybe it was the right item, but it turns out to be defective. These are the risks that you take. The statement "buyer beware" applies here. Make sure that you do your homework.

Is bartering right for you? You bet it is. It gives you the ability to get what you needby trading what you don't want.

PROTECT YOURSELF FROM BAD DEALS

Follow a few rules to help you from making a poor trade—and always aim to be fair and honest.

✖ Work with people you trust. Start with family and friends and then branch out from there.

✖ Know exactly what you are looking for and know what you are willing to barter for that item.

✖ Stick to your guns. Don't let anyone try to get more from you than you are willing to give.

✖ Be honest. Don't try to pass off broken items and don't low-ball people.

✖ Don't be afraid to turn something down. You are under no obligation to do the deal. If something doesn't feel right, just walk away. Other opportunities will likely come along.

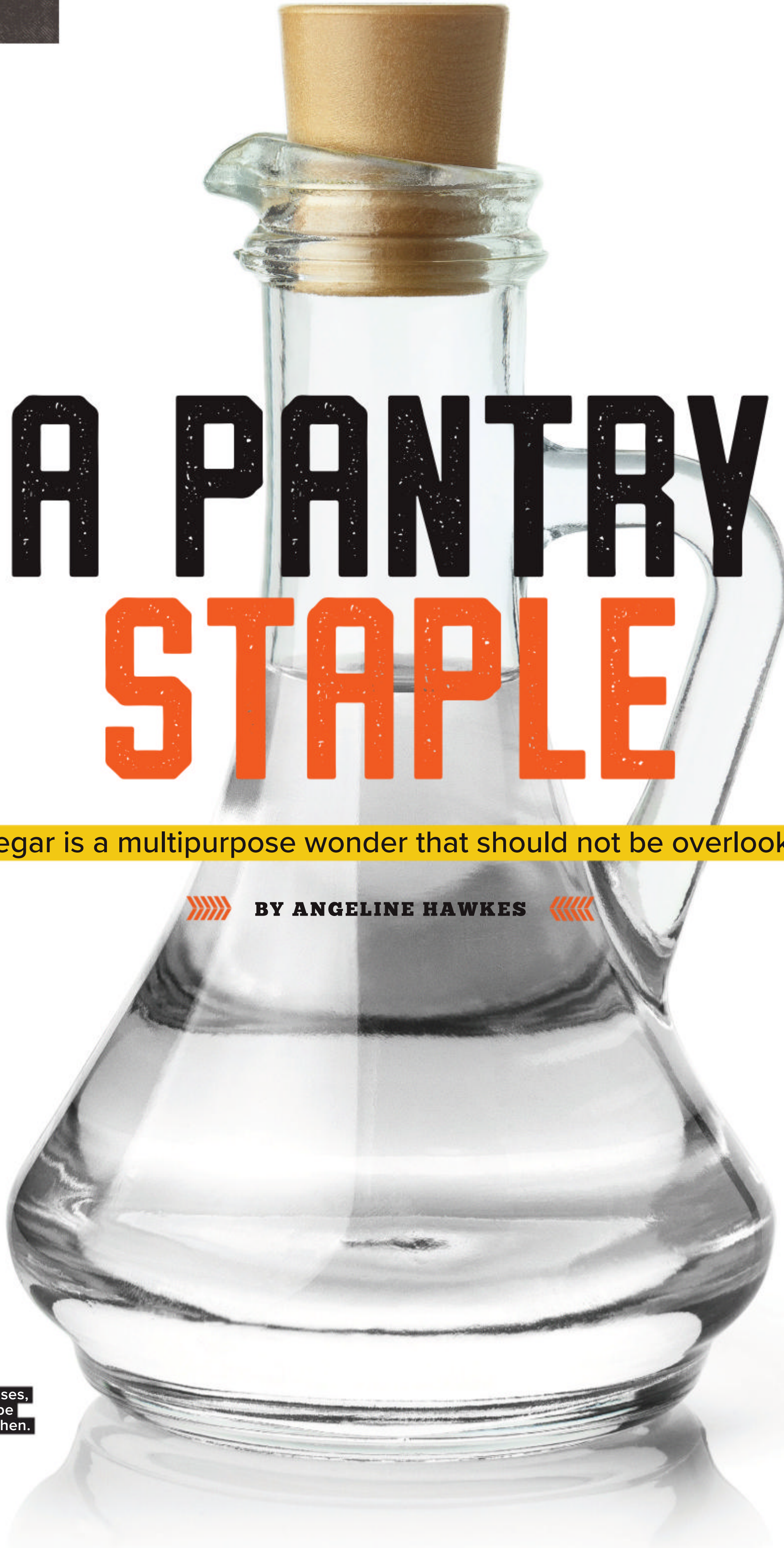
Dana Benner has been writing about the outdoors, homesteading and self-sufficiency for 34 years. His work appears in many publications.

Having skills like carpentry, electrical or plumbing repair are all very desirable when it comes to what you can offer in trade.

A PANTRY STAPLE

Vinegar is a multipurpose wonder that should not be overlooked.

BY ANGELINE HAWKES



With all its uses, this should be in every kitchen.

Vinegar is made by adding bacteria to any type of alcohol, be it wine, hard cider or beer.

THE NAME COMES FROM THE FRENCH AND TRANSLATES TO SOUR WINE (*VIN AIGRE*), AND, QUITE LITERALLY, THAT'S WHAT VINEGAR IS. ITS USAGE DATES AS FAR BACK AS 5000 B.C. TO THE BABYLONIANS, WHO USED IT AS A PRESERVATIVE, A CONDIMENT AND FOR MEDICINAL PURPOSES.

Today, this household staple is still very much in demand. It’s a go-to ingredient in the kitchen for cooking and acts as a preservative for pickling everything from beets to green beans. But this amazing fermented liquid also has a wide variety of other uses, ranging from medicinal aids to housekeeping tasks to gardening.

VINEGAR, DEFINED

Vinegar begins with a sugary or starchy source, such as fruits (wine), potatoes, whole grains or rice. Making vinegar involves fermentation, as well as the by-product of fermentation, acetic acid. To start, yeast feeds off sugar or starch in wine or apple mash, for example, creating fermentation. This turns the liquid into alcohol. Over time, the alcohol combines with both acetic acid bacteria, known as acetobacter, and oxygen to form the nonalcoholic, sour-tasting vinegar.

Today’s vinegars are required by the FDA to contain a minimum of 4% acetic acid. In addition to serving as a flavoring for many dishes, vinegar contains mineral salts, amino acids, trace vitamins and polyphenolic compounds (which have healthy, antioxidant properties).

DISTILLED WHITE VINEGAR VS. APPLE CIDER VINEGAR

The most commonly used multipurpose vinegars in the U.S. are distilled white vinegar and apple cider vinegar. Distilled white vinegar is made from the diluted alcohol from fermented grains. Potatoes, sugar beets, milk whey and molasses are all used to create this vinegar. While less flavorful than other wine vinegars, its higher acidity (about 5% acetic acid) is preferred for pickling. Plus, its lack of color won't interfere with fruits and vegetables. It's also cheap to make and buy. Note that distilled white vinegar is different from basic white vinegar, which is stronger and has much higher levels of acetic acid (up to 25%). Those high levels mean it should not be used for cooking or be ingested.

Apple cider vinegar is, not surprisingly, made from parts of the apple. It's brown in color and less acidic than white vinegar. Because apple cider vinegar's origins are fruit-based, in addition to antimicrobial benefits, it's an antioxidant and contains more vitamins, probiotics and minerals. For these reasons, it is utilized more in medicinal preparations and in food where flavor is important. Due to the darker color and lower acid, it's not particularly good for pickling or preservation.

Recently, there has been some hype surrounding apple cider vinegar as an effective weight-loss aid, but as the Harvard Health newsletter notes, "the scientific evidence that vinegar consumption (whether of the apple cider variety or not) is a reliable, long-term means of losing excess weight is not compelling."

Vinegar is great in salad dressings.

ON THE MENU

Vinegar is used for flavoring in foods and in salad dressings, sauces and marinades. Low in calories, it makes an excellent base for dressings and sauces, and apple cider vinegar also offers extra nutrients. When used in cooking, the acid content softens food properties. Essentially, the acid "cooks" the food, altering the taste. This ability to soften foods, especially meat, makes it an excellent choice for inclusion in marinades. White vinegar combined with baking soda is a leavening agent in baked goods. The alkaline of baking soda mixes with the acid in vinegar to release carbon dioxide, allowing cake to rise. Vinegar can be used to make sour milk/buttermilk for recipes: Just add 1 tablespoon of vinegar to 1 cup of milk. Vinegar's acid separates the curds from liquid whey in whole milk creating cottage cheese.

APPLE CIDER
VINEGAR

You can add apple cider vinegar to your laundry to eliminate odors.

PRESERVATIVE

Vinegar is a key ingredient in pickling and can also be used as a preservative by itself. Sliced or whole jalapeños, cucumbers or okra (among other foods) can be placed directly into vinegar for storage in the refrigerator. The acid kills bacteria, extending the shelf life of the immersed foods. It does have a slight effect on the food's flavor.

HOUSEHOLD USES

Due to its acid content, white vinegar is an ideal disinfectant. However, while the acetic acid in vinegar is good at killing most bacteria, it won't kill all types (such as salmonella). For most household cleaning, fill a spray bottle with half water and half white vinegar. It's great for cleaning bathrooms, floors, windows, kitchens, appliances and countertops. Use white vinegar undiluted to remove caked-on grease, mildew, rusted metals and mineral deposits on plumbing fixtures such as shower heads. Just avoid using it on finished wood surfaces, as the acid may damage the finish.

To kill black mold, remember the 5:5:1 rule: five parts white vinegar, five parts water and one part baking soda. Mix and fill a spray bottle. To clean a dishwasher, pour 1 cup of vinegar into the dishwasher and run it without dishes. Pour 1 cup of white vinegar into a coffee maker and run it to clean the appliance. Clean a microwave by placing 1 cup of white vinegar in a glass container and running it for about 1–2 minutes. The steam and vinegar combination loosens splatters and easily wipes off with hot water. Got a clogged drain? Pour ½–1 cup baking soda into the drain. Then pour in 1–2 cups of white vinegar. The resulting chemical reaction causes foaming, dissolving the clog. Flush the drain with hot water. To brighten whites in your laundry, add 1 cup of white vinegar to a load of white clothes with your normal detergent and wash as usual.

BECAUSE OF ITS ACIDIC NATURE, VINEGAR WILL LAST NEARLY FOREVER ON THE SHELF WITHOUT SOURING OR SPOILING.

MEDICINAL USES

Historically, vinegar was used in China, Greece and the Middle East to treat indigestion, respiratory ailments and as an antibacterial to clean wounds. Vinegar is still used to treat these conditions and more. There's some evidence that vinegar may help reduce blood sugar and insulin levels and lower cholesterol. Because of its antimicrobial properties, it can be effective when used topically to treat skin infections, nail and skin fungi, insect stings and warts. Soaking cotton pads in apple cider vinegar and applying to hemorrhoids may bring relief. If burning or sensitivity ensues, discontinue use.

To treat acid reflux symptoms, mix 1 teaspoon apple cider vinegar with 6–8 ounces of water and drink before and after meals. Use apple cider vinegar as a hair rinse to remove dandruff.

Most vinegar contains 4–7% acidity, which is safe to consume in small amounts and when diluted in water. But vinegar with an acid concentration of 20% or more is poisonous and will burn the esophagus and digestive tract. Quantity is also important. Most people who use apple cider vinegar consume 1–2 tablespoons per day. Exceeding 8 ounces a day can lead to some dangerous health issues.

ON THE SHELF

Give these variations a try.

There are many types and flavors of vinegars. Some are more expensive due to their ingredients.

✖ **Balsamic Vinegar**
This is the healthiest of vinegars thanks to its high antioxidant content. It's generally sweeter than most other vinegars and is typically used in salad dressings, sauces and marinades.

✖ **Flavored Vinegar** These vinegars usually have a wine base and are infused with herbs, fruit particles or purees to create flavors for use in dressings and marinades. These are easy to make at home with existing vinegar by adding fresh herbs, such as rosemary, and allowing the herb to infuse the vinegar for a time.

✖ **Malt Vinegar**
This vinegar is made from un-hopped beer and is strong in flavor. It is most commonly used as a sauce or dip for meats.

✖ **Rice Vinegar** It's made from fermented rice and has a sweeter flavor. Rice vinegar is a popular ingredient for cooking Asian cuisine.

✖ **Wine Vinegar** These sharp-flavored vinegars are made from red or white wines. They're most commonly used for marinades for meat or fish, and in dressings for salad.

IN THE GARDEN

Vinegar can be helpful outside the home, as well. To kill weeds, spray them with full-strength white vinegar. To make a natural bug trap, add 1 cup apple cider vinegar, 1 cup water and sliced banana peel pieces to a plastic container with a lid, such as a tub of margarine. Make holes in the lid that are large enough for flies and other bugs to fit through. Place the lid onto the liquid-filled container, then set the trap wherever insect infestations are a problem (keep away from pets and children). Throw away the container when it's full of insects (or empty, clean and refill).

MAKE YOUR OWN

Vinegar can be made at home from wine and water. The more adventurous will find plenty of recipes and instructions online for more varied vinegar creations. Remember, it begins as sugar, which changes to alcohol, then to vinegar. The easiest method, for apple cider vinegar, takes up to a year to complete. Simply allow unpasteurized apple juice to sit in a dark place. It will ferment and change into cider. Wild yeast then breaks the apple sugar into alcohol, which ferments into acetic acid, giving you vinegar.

If you don't want to leave a container of apple juice sitting about to do its own thing, try this: In a sterilized 24-ounce-or-larger jar, add 12 ounces of distilled water and 12 ounces of wine or unpasteurized 100% apple juice/cider. (Don't use tap water. It will make the resulting product taste off.) Add store-bought "mother" (also called vinegar starter) into the jar. The mother is a biofilm composed of a form of cellulose, yeast and bacteria; it creates acetic acid. Follow the mother product's instructions on how much to add. Cover the jar with a breathable fabric like muslin or cheese cloth and secure with a rubber band. Store the jar in a dark place in temperatures between 59–85 F for a minimum of two months. Don't disturb the jar. It may smell bad or vinegary. Leave it alone. After a minimum of two months, remove the gelatinous mother floating at the top of the jar. (You can save the mother for future vinegar making.) Pasteurize the vinegar by cooking it in a pan to 140–159 F over medium heat. After the vinegar completely cools, strain it through clean muslin or a coffee filter into a sterilized, airtight container. Homemade vinegar shouldn't be used for home canning due to the non-standard levels of acidity.

WITH JUST WINE AND WATER, PLUS A LOT OF TIME, YOU CAN MAKE VINEGAR AT HOME!

Homemade vinegar can taste a little stronger than the store-bought version.

Angeline Hawkes writes for *Backwoods Survival Guide*, *Backwoods Home Magazine*, *Prepper Survival Guide*, *Self-Reliance Magazine* and others. Visit her YouTube channel, Canterbury Trails Farm: youtube.com/c/CanterburyTrailsFarm.

CREATURE COMFORTS

Keep livestock safe when the snow flies.

BY CECI HAMPSON-ELLIS

Just because they spend most of their time outdoors doesn't mean they don't need your help in the winter.

CRITTER MANAGEMENT IS OFTEN A KEY COMPONENT OF A HOMESTEADING LIFESTYLE. IF YOU ARE RAISING LIVESTOCK, YOU ARE RESPONSIBLE FOR PROVIDING SHELTER, FOOD, WATER AND EXERCISE. MANY ANIMALS CAN TAKE CARE OF THEMSELVES FOR MOST OF THE YEAR, BUT THAT ALL CHANGES WHEN WINTER COMES.

Your critter management plan depends on factors unique to your operation and local climate, but ideally you've thought ahead even before the weather started to change. When locating and building pens, paddocks, coops and barns, you must take into consideration the terrain, the direction of prevailing winds, water accessibility and ease of maintenance. Managing environmental conditions facilitates winterization, as well as helps reduce behavioral problems and minimizes disease and loss of the animals.

WINTER IS HERE

It goes without saying, making preparations before the temperatures plummet is key. If your homestead is in the far north, hopefully you've had your winter preparations in place since mid-September. Less extreme climates, such as the mid-Atlantic states, might have given you an additional month. In the deep South and the desert Southwest, you may even have had until late November. However, winter weather is not forecast in stone and you never want to be caught by surprise.

By now, with the snow flying, your animals should have appropriate shelter to keep them warm and protected from the elements. While many animals are able to withstand very cold temperatures due to their winter coats, at the bare minimum they still need a windbreak. This can be a dirt mound, a row of trees or a metal or wooden wall. Consider installing snow fences to prevent deep drifts from creating problems.

If you have a more elaborate shelter in place, remember that animals need enough room to lay down in clean bedding and to stand and turn around in their stall or pen. The minimum space requirement for a horse or a cow is 12x12 feet (144 sq. ft). Goats and sheep need a minimum of 4x5 feet (20 sq. ft). For chickens, a 4x8 foot coop with a roost bar should be enough space for eight chickens. More space is required if animals will be penned for long periods of time.

MANAGING MUD AND MUCK

Mud—and by mud, I don't just mean wet dirt—is usually found wherever livestock animals gather in the winter, such as near a shelter, in the paddock or near a water source. Allowing them to stand in mud will cause them to be constantly chilled and will increase the chances they may contract diseases, such as thrush or foot rot. Furthermore, cold, wet feet encourage parasitic infections.

CATTLE RELY UPON YOU TO MAKE SURE THEY HAVE FOOD, WATER AND A WAY TO STAY WARM.

Winter comes every year, and you need to be ready to handle the basic needs of your animals.

You can use gravel, wood chips, gutters, sand or drainage tiles to divert winter water away from these areas, which will minimize mud accumulation. Regularly remove mud and manure from pens and paddocks.

Proper manure management benefits you, the animals and the entire ecosystem. While manure management is not as critical in pastures as it is in the paddocks and pens, you will need to exercise care near watering sites to prevent soil erosion and to protect water features such as ponds or streams, especially if they are used as a water source. Grazing animals can contaminate these water sources by dropping manure directly into them. It is best to restrict your animals' access to ponds, streams or wetland areas.

Once you have removed manure from pens and paddocks, put it to good use in your compost pile, along with other organic by-products of animal care such as spilled feed or used bedding straw. While smaller homesteads may not have as much acreage for compost application, well-aged, organic manure is also a "cash crop" of sorts you can sell to other farmers in your area to supplement income.

Make sure there is always plenty of water available for all of your livestock.

FOOD AND DRINK

While many farm animals are able to withstand colder temperatures, keep in mind that their nutritional requirements typically increase significantly during the winter, particularly if the animals get wet, such as from rain or melting snow. Generally speaking, the lowest external temperatures animals can tolerate, without supplemental nutrition, and still maintain normal body temperature is 20 F. If temperatures dip lower, you will need to give them more calories. Animals with wet coats will require 2% more energy (calories) for every degree the mercury drops.

If you're raising bees, provide them with an adequate supply of honey to get them through until flowers bloom next spring. You also need to insulate their hives, while making sure they have adequate ventilation. You can create a windbreak from bales of straw or hay. Just be sure to orient the hive entrance opposite the prevailing winds. Remember to check on them on warmer days.

Your two- and four-legged critters also require fresh, not frozen, water. Different animals have different water requirements. For example, cattle and horses will consume seven to 12 gallons of water per day, per head. Smaller animals such as chickens and rabbits may drink up to one gallon per day, per animal. Animals who drink adequate water are less likely to experience impaction and/or colic. The real challenge is to keep the water flowing free to your animals in the manner they are used to consuming it, whether in a trough or an automatic waterer, all winter long.

You can slow or prevent your trough from freezing in the winter by partially burying it. Let the earth insulate for you. You will need to drain the tank, dig a hole half the depth of the tank, then put the tank in the hole. If you put the displaced dirt around the sides, it will add insulation. Using this method for outdoor troughs along with electric tank heaters improves efficiency and reduces electricity usage. (For more options, see sidebar, right.)

ANIMAL HANDLING

Animals that are normally free-range may become nervous and excitable when confined to close quarters. When you add in extreme cold, high winds and dramatic barometric swings, it exacerbates their excitability. Pens and areas for sorting, checking, treating or confining your animals need space for both you and your animals to safely maneuver.

The floors in holding or housing areas should have proper drainage. Barn floors, pens and paddocks should have traction to help prevent injuries to handlers and animals. Be sure any handling alleys, pens and paddocks have no protrusions, such as an errant nail or screw. This will prevent injuries and torn clothing. When muddy conditions occur, be sure to add additional bedding to provide traction in slippery holding and handling areas. Lastly, move slowly and talk softly around your animals.

KEEP YOUR WATER FLOWING

Hydration options should not be overlooked.

- Ensuring your animals have access to fresh, clean water is essential to their health. In the winter, battling frozen water buckets and tanks can be a real challenge. By utilizing tank heaters, heated buckets or automatic waterers, water is kept ice-free and at a temperature your animals are comfortable drinking. If using electric tank heaters, check with a voltmeter to ensure there is no current running through the water.

- If the power goes out due to a storm, you can prevent water from freezing in a trough by insulating the exterior of the tank with plywood or polystyrene foam secured with C-clamps. If the ground is frozen, stack a few bales of straw or waste-hay around the sides of the trough. Fill any gaps between the bales and tank sides with loose straw. Be sure that your animals aren't eating the bales because if the baling wire comes loose, it is a hazard.

- Larger volumes of water self-insulate, prolonging the time it will stay clear of ice. A five-gallon bucket will freeze through much faster than a 150-gallon tank. When temperatures are predicted to drop below freezing, fill your largest water tank(s) all the way to the brim to maximize the power of self-insulation.

- You can also DIY a double-walled stock tank. It works the same way a double-walled tumbler keeps drinks hot or cold. This is one of the most effective power-free ways to keep water ice-free. Use two containers of different size—buckets or stock tanks. Put the smaller one inside the other, and then add insulating material—foam or fiber insulation works best, but dirt, straw or hay chaff will work in a pinch. Paired with a partial cover, this generally keeps a large tank from freezing over for a long period of freezing weather.

- When ice does form, don't just break it. Remove it and refill the tank or bucket. This extends the amount of time until the tank freezes over again.

Believe it or not, many a horse or cow enjoy a good romp in the snow. And even in winter, animals require exercise to promote skeletal and muscular health, while preventing overgrown hooves and obesity. One way to promote exercise is to vary the water and feed sites. Trim hooves regularly and inspect your animals for signs of inflammation, swelling or disease.

Animals, like many people, are creatures of habit, so if your cows are used to being milked at 7 a.m. during the other seasons, they will need to be milked at the same time, regardless of the sun's position in the sky. For those with dairy herds, it makes sense to give them a break until March or so. Some farmers may keep milking only a couple of animals through January in order to have fresh milk on the table through the holidays.

Your livestock animals often represent a significant investment of time and money, not to mention companionship, so be prepared for winter weather. Their lives may depend on it.

Ceci Hampson-Ellis lives in Phoenix with her husband and cats. She volunteers her spare time at Liberty Wildlife helping to care for injured and orphaned wildlife while educating the public on why healthy wildlife is important.

TAKE CARE OF YOUR LADIES AND THEY'LL PROVIDE YOU WITH PLENTY OF EGGS!

Chickens need a safe place to keep warm and be protected from predators.

CHAPTER 3

DIY PROJECTS

WITH SOME BASIC KNOWLEDGE AND A BIT OF ELBOW GREASE, YOU CAN DO ALMOST ANYTHING.

Whenever possible, use the same measuring device throughout the project to avoid the risk of variance between tools.

MEASURE TWICE

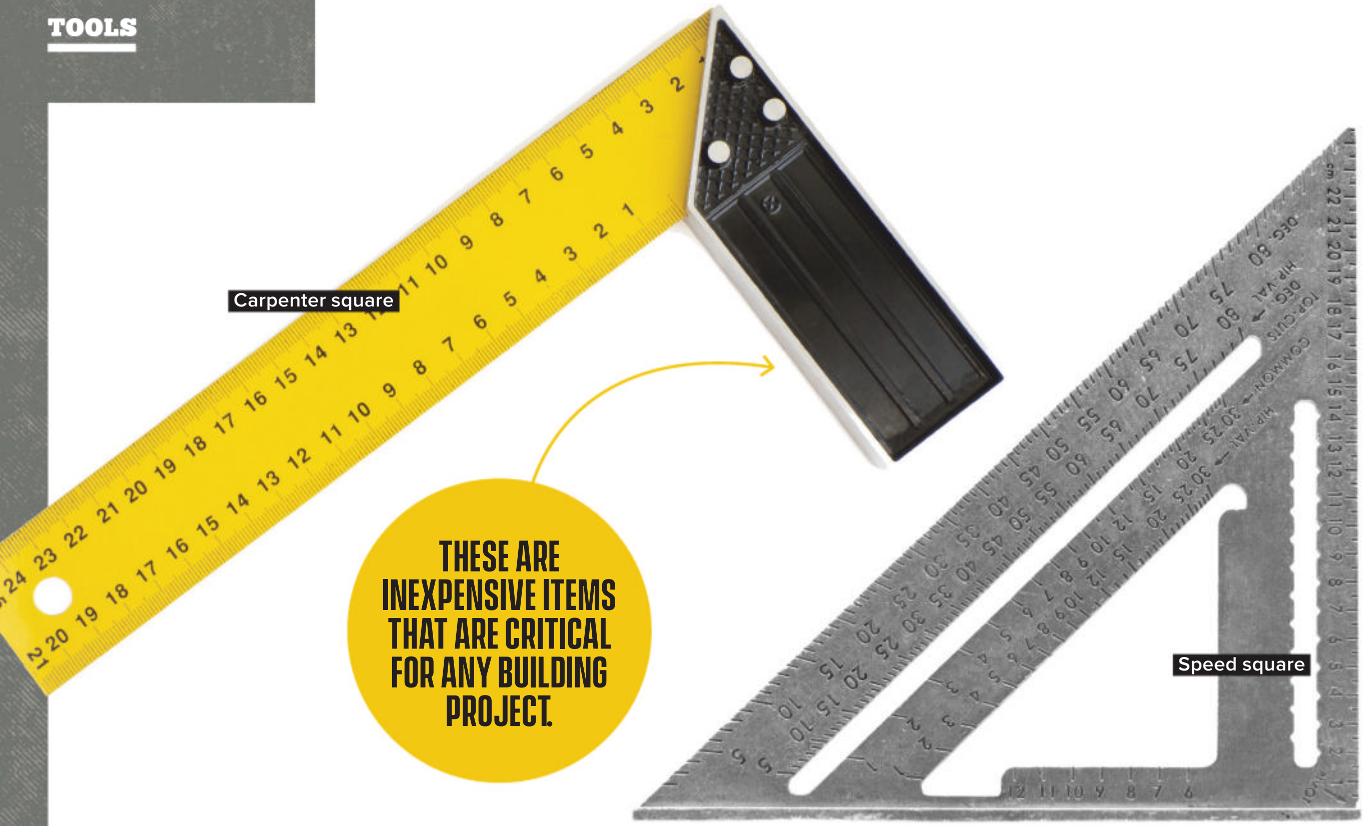
Tips and tricks for precision work.

BY RYAN LEE PRICE

ITALIAN GOLDSMITH, SCULPTOR, DRAFTSMAN, SOLDIER AND MUSICIAN BENVENUTO CELLINI (1500-1571) STARTED WRITING HIS AUTOBIOGRAPHY IN 1558, WHERE HE STATED: "IT MUST, MOST BLESSED FATHER, BE ALLOWED THAT IN THOSE CASES WHERE MEN ARE RISKING ALL UPON ONE THROW, IT IS NOT WRONG TO DO AS CERTAIN POOR AND SIMPLE MEN ARE WONT TO SAY, WHO TELL US WE MUST MARK SEVEN TIMES AND CUT ONCE."

Simply put, if you have a lot riding on something important, make sure you have a solid plan before you set out, even if you're just sawing lumber.

There are a few things to always keep in your toolbox, like screwdrivers and hammers, but a couple of other devices should also top the list: a tape measure and a carpenter square. More accurate work can be done with those two tools than almost anything else. And with everything from building a survival shelter in the woods to crafting an armoire for your bedroom, accuracy matters.



THESE ARE INEXPENSIVE ITEMS THAT ARE CRITICAL FOR ANY BUILDING PROJECT.

CARPENTER SQUARE AND SPEED SQUARES

The L-shaped carpenter square (also known as a framing square) is one of the most easily recognized of all the carpentry tools, even among those whose job it is to solely measure things. Along with its triangle-shaped cousin, the speed square, it is an accurate right angle, and the good ones are always made out of some kind of metal, preferably steel or thick aluminum (although quality speed squares can be plastic). It was patented in 1819 by Silas Hawes, a blacksmith from South Shaftsbury, Vermont. The standard square has a 24 x 2-inch blade with a 16 x 1.5-inch tongue, which is probably the largest dimension you would need for any carpentry work, but they are also offered in smaller sizes.

HOW TO USE IT

There are several different ways to effectively use the carpenter square, and many ways to adapt it to whatever you are working on. Although a lot of the functions of a carpenter square have been replaced by calculators and apps, typically the main purpose of the tool is to mark patterns and measure distances related to framing jobs (i.e. house building). It is most handy when marking angles for roof construction, the building of stair steps and for making sure that wall frames are at perfect right angles.

A carpenter square can also be used to make sure material is square or that two pieces are aligned properly. A speed square can produce a variety of angles as well as rise-over-run calculations needed for roof angles.

HOW TO READ IT

There are essentially three sections of the carpenter square. The longer arm is referred to as the blade and on it is the face. This section is slightly wider than the other arm, which is called the tongue. The outside corner where the two meet is known as the heel.

On both sides, measurement increments can be as low as 1⁄16 of an inch but are most commonly ⅛. Some squares are divided into 1⁄12-inch increments and 1⁄10-inch increments to make it easier to work with decimals.

Some of the professional squares offer much more information to make roofing and framing calculations easier. For example, rafter length tables can be printed in a chart on the back side of the square and allow you to figure out the length of a rafter by choosing a “full scale” number that matches the unit rise (slope or angle) of the roof. If you are calculating how long a rafter will be on a 18⁄12 sloped roof (meaning a roof that increases 18 vertical inches for every 12 horizontal inches) for a 20-foot-wide shed, simply look at the number underneath the 18 inches on the square (21.63). Multiply that by 10 feet and you end up needing a board 18.25 feet long.

Tips and Tricks

Here are a few pointers on the use of these tools.

- Factory finished ends of lumber aren't often squared. Use a speed square on the end of the lumber and cut off an inch or so.

- Speed squares are a quick saw guide for cutting 45- and 90-degree angles. This is one time when plastic tools are the better choice, as they're thicker than most metal ones, making them a good fence for the saw to ride against as you cut the material.

- To make angled cuts, use the pivot point as your base mark and then swing the square until you read the desired angle on the board's edge.

- To draw a circle with a square, tack a nail into the board at the 90-degree corner and then pick a notch for your circle's size (the radius). Move the pencil and square around the nail and you have a circle.

- To find the center of a circle, use both a speed square and a carpenter square. Place a carpenter square on the edge of the circle and put the speed square's long side inside the corner of the carpenter square. Draw a line and repeat on the opposite side. Where the lines cross is the center.

THESE TWO SIMPLE TOOLS CAN SERVE A RANGE OF FUNCTIONS, FROM SQUARING MATERIALS TO PRODUCING ANGLES.

Learn how to read a ruler and calculate fractions.

Ensuring precise joints where boards meet is essential for building success.

- Because of the speed square's lipped edge, you can make rip lines along the length of any board at any width. Place it against the board, find your width with the pencil and slide the two down the board, marking along the way.

MEASURING TAPE

For many people, the ubiquitous measuring tape is a one-trick pony, a simple tool used to measure from Point A to Point B. Little do they know that it is a versatile tool with a host of additional skills. Its history goes back a couple of hundred years, as it was first used in making the wire supports found in hoop skirts. It was patented by James Chesterman in 1829 and improved over the next century, although it was not widely used until the 1950s.

Like any good ruler using imperial measurements, the tape measure has foot and inch markings, usually going down to 1⁄16 of an inch with a variety of sized lines etched onto the tape. Some share the measurement with the metric system but most sold in the U.S. only feature imperial.

HOW TO READ IT

Using a measuring tape is as simple as lining up the tang to a point and extending the tape measure's reel out to a second point. Usually, the top number is in feet and inches, while the bottom number is in inches only.

You might notice the 16, 32, 48 and other numbers every 16 inches are in red boxes (or are called out somehow). These indicate typical wall stud spacings normally found in most framing applications.

The black diamonds found every 19 3⁄16 inches indicate on-center joist spacing, so you can space out floor joints when framing or quickly find them under sheeting by measurement alone. This can also be used for dividing an 8-foot span into five equal parts.

There is a tang on the end that can be used to measure both inside and outside dimensions because of its independent movement. The tang can slide back and forth the width of itself to compensate for its own thickness, usually 1⁄16-inch. It features a couple of notches to perch on a screw or nail head when measuring. All quality tape measures feature a locking mechanism to keep the tape extended, and the housing itself is always a specific dimension (usually 3 inches) so the body can be used to measure as well.

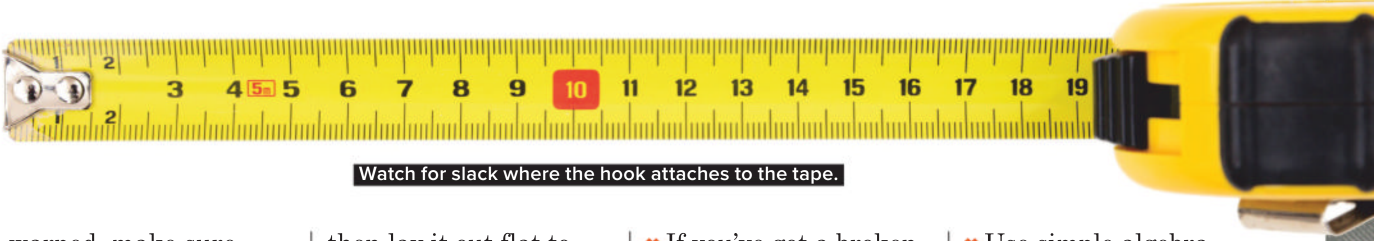
Tips and Tricks

Use these to get the most use out of your measuring tape.

- The serrated edge on the tang can also be used as a marker. If you don't have a pencil, scratch the tang back and forth to mark the spot.

- The hole in the tang can be used to make perfect circles. Insert a nail or screw in the middle of the material to be measured, then hook the tang to the head. Find the right radius and use the pencil to follow the tape measure around for a full circle.

- Since the tang can become bent or



Watch for slack where the hook attaches to the tape.

warped, make sure to frequently verify your tape measure's accuracy against a known distance.

- If you need to measure the outside diameter of a cylinder or sphere, use a flexible measuring tape. If you don't have one, find a length of string, make the measurement and then lay it out flat to measure with the tape measure.

- If you are making frequent measurements, mark those lengths directly onto your tape measure with a pencil or Sharpie. Use an array of colors to keep the different items distinct. They can be cleaned off for the next job.

- If you've got a broken tang, just start all of your measurements at 1 inch and then subtract 1 inch from your final measurement.

- Drop something behind a cabinet? Attach a magnet to your tape's tang and extend it down to snag what you dropped.

- Use simple algebra to find out if your project is square. Measure 3 feet on one side and 4 feet on the other. The measurement between those two marks should be exactly 5 feet. Along this same idea, if you are building a square box, the diagonals from corner to corner should be equal distances.

Cabinetry requires precise measurements for everything to fit together perfectly.

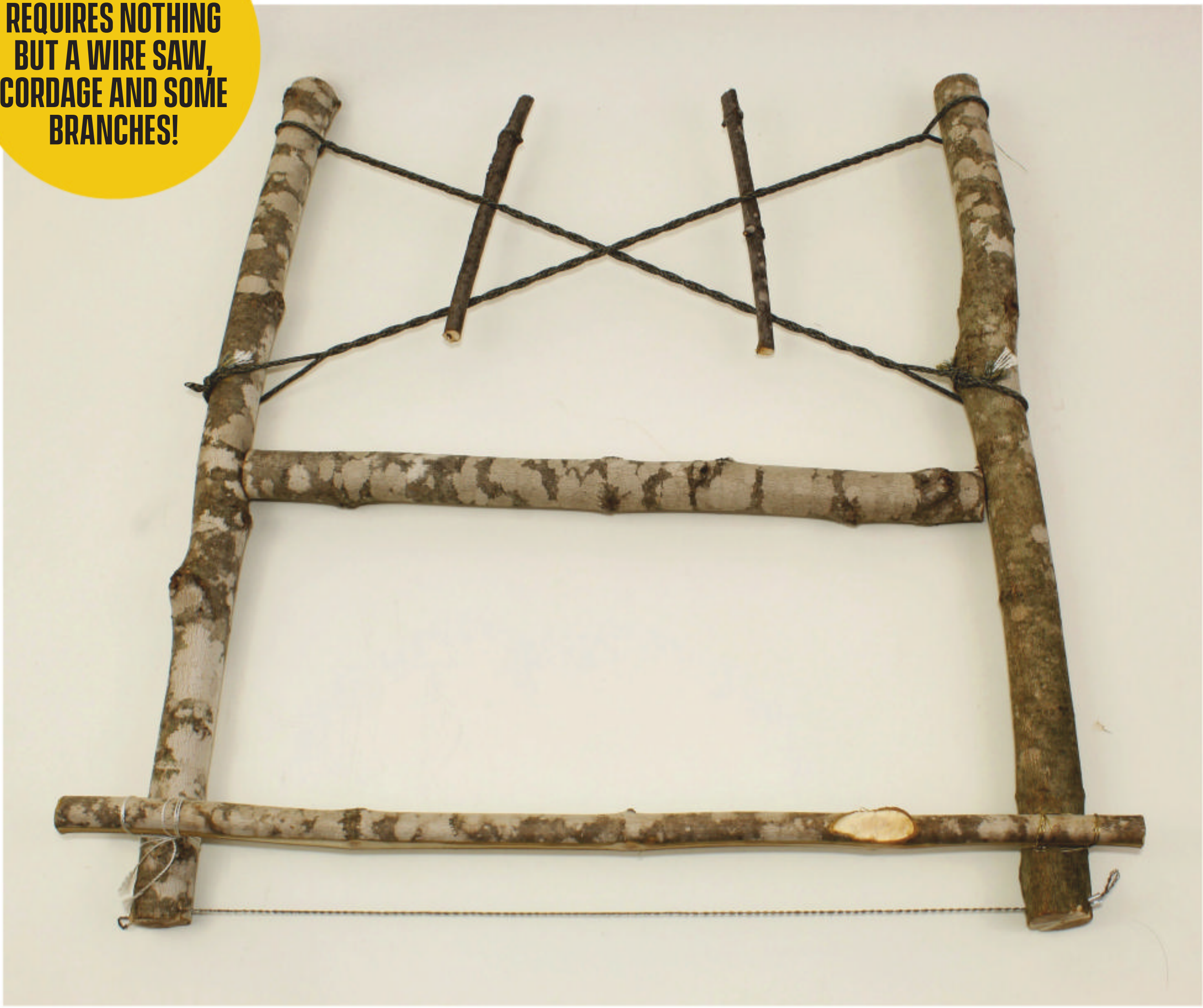
Ryan Lee Price is a freelance writer living in Corona, California, with his wife and kids. When not exploring the flora and fauna of the backwoods, he is busy climbing Southern California's tallest peaks.

TELL ME WHAT YOU SAW

Level up your skills with this trick.

PATRICK DIEDRICH

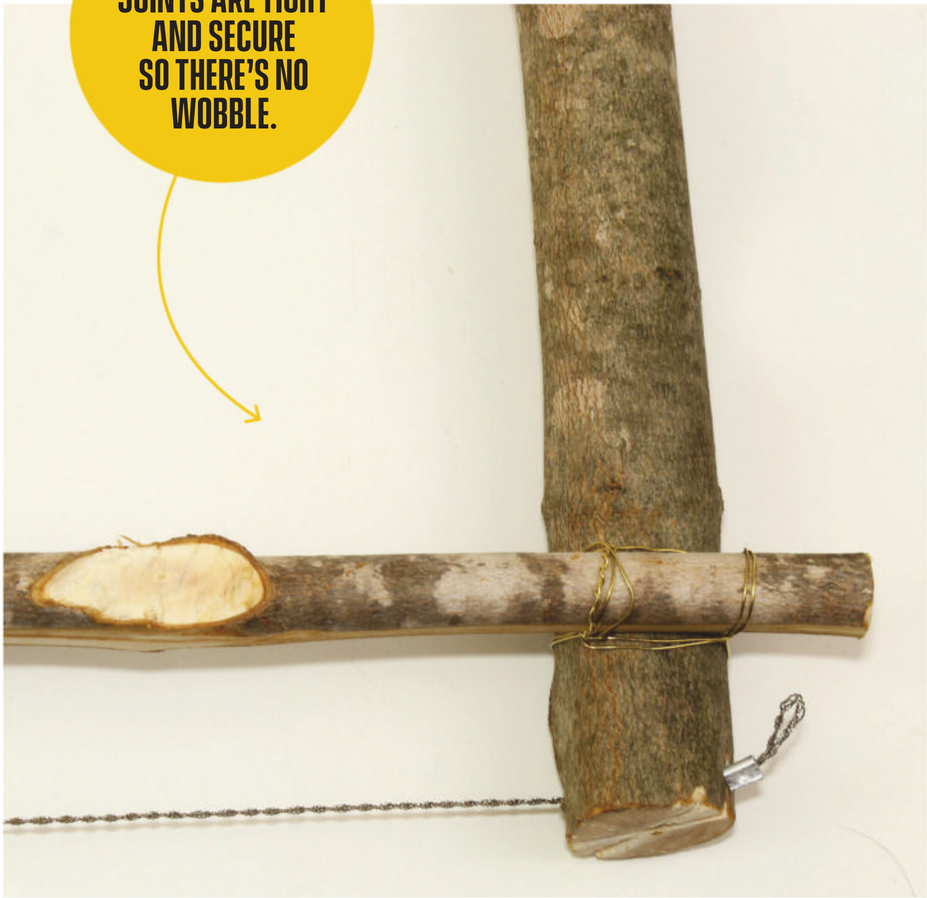
THIS PROJECT REQUIRES NOTHING BUT A WIRE SAW, CORDAGE AND SOME BRANCHES!



A wire saw mill is a way to produce truly flat boards and other wood items.

DAY THREE OF A WEEKLONG BACKPACKING TRIP BEGINS WITH A PLEASANTLY SUNNY MORNING. OUTSIDE THE FRAGILE SAFETY OF A LIGHTWEIGHT NYLON TENT, NATURE CALMLY BECKONS. AFTER PACKING FOR THE NEXT STINT OF THE JOURNEY, AND HIKING FOR A FEW MILES, THE WEATHER TAKES A SOUR TURN. DARK CLOUDS MOVE IN, BRINGING WITH THEM HIGH WINDS AND DRIVING RAIN, THE OPEN SALVO OF A RAPIDLY DEVELOPING SUPERCELL.

Blinded by torrential downpours, hunkering down under a poncho away from violently swaying trees seems to be the safest option. As the storm moves on, it seems to have left unanticipated destruction in its wake. Straight line winds have downed trees across the trail in both directions, and trying to navigate through them looks like it's going to take a long time. Cell service is spotty, and probably becoming overwhelmed by the number of users trying to call for help or check on loved ones. Deciding to avoid injury by climbing over wet, downed trees with gear, the decision is made to shelter in place while signaling for help until cleanup crews can clear the trail.



MAKE SURE ALL JOINTS ARE TIGHT AND SECURE SO THERE'S NO WOBBLE.

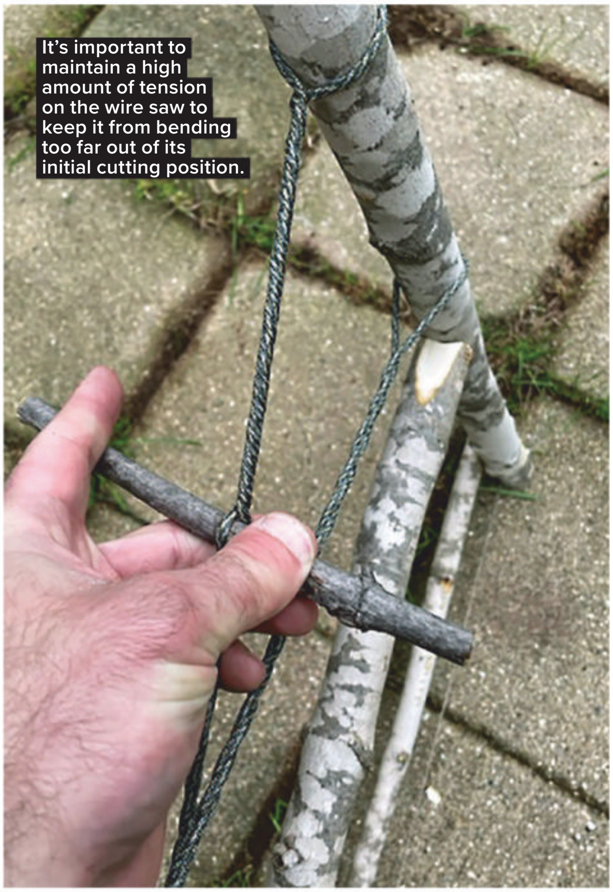
WHY A SAW?

The scenario above is not so far-fetched, as random acts of nature can occur anywhere, at any time. Whether it is an emergency shelter in place situation or simply spending time in the great outdoors, it's never a bad idea to improve one's standard of living. Among recreationalists and bushcraft aficionados, the basics of using a knife, hatchet or ax are typically well known and practiced. But the saw is usually left at home to sulk in the garage, due to its weight and bulk. After all, what good is a third cutting tool when you can baton or chop your way through woody mass?

Plenty of reasons exist for sawing rather than chopping. For starters, a sharp saw is more efficient than swinging metal wedges. Ever try chopping all the way through a green log? It's a physically demanding and time-consuming task, and one that requires a modest amount of practiced skill. Using a saw offers a degree of safety that forcefully swinging a heavy wedge of sharpened metal does not. Having a leg or foot in the wrong place while wielding an ax can result in traumatic injury, especially when fatigue comes into play. That being said, axes are incredibly useful and powerful tools, but the refinement that a saw can offer is unmatched, especially when it comes to upgrading one's quality of life.

A TOOL LIKE THIS IS ONE WAY TO SMOOTH THINGS OUT, RATHER THAN JUST ROUGHING IT ALL THE TIME WHEN YOU'RE OUTDOORS.

5Col is an outdoor gear company that makes one of the more aggressive cutting wire saws.



It's important to maintain a high amount of tension on the wire saw to keep it from bending too far out of its initial cutting position.

ENTER THE WIRE SAW

Blade composition for many tools has come a long way since the days of knapped flint or obsidian. From hand saws to chainsaws, the styles and uses abound, and the cutting edges can last for a very long time with proper care and maintenance. Materials have become stronger, lighter and easier to produce. This is where the wire saw comes in. There are some who scoff at the idea of even packing a wire saw, but they would be sorely mistaken. Wire saws weigh almost nothing, are tough enough to turn the spindle of a bow drill and can be used as emergency cordage. In fact, the uses are limited only by the imagination, which means there are few excuses for leaving such a versatile tool behind.

Wire saws come in a variety of options, differing in length, diameter and cutting style. Two of the more popular styles are the braided cable and the more aggressive barbed cable. Both will do the job, and the preferred style, much like any other tool, depends on the individual or the intended use. Barbed cable will cut much more aggressively, but the tradeoff is the force that needs to go into each cutting stroke. Smooth, braided cable will bite the wood with less effort, but it will take a bit longer to make it through to the other side.

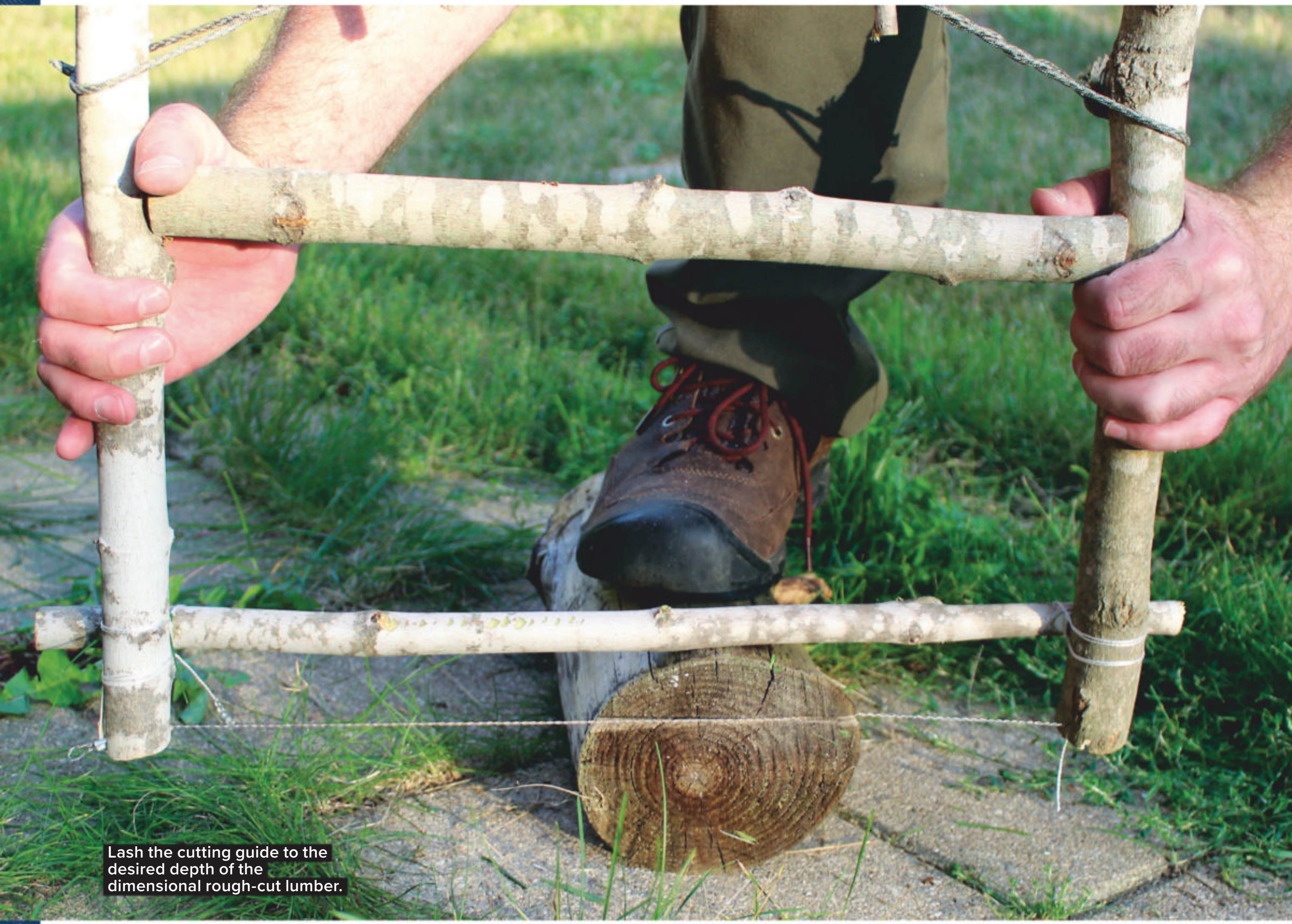
Woodsmen and women have begun using wire saws in many creative ways. One of the simplest ways to make a wire saw more effective is to carefully bend a straight green stick, placing the ends of the wire saw into notches on each end. This makes a quick and versatile bow saw, perfect for cutting branches and smaller diameter logs. Assembling a bow saw in this manner also makes it easier to construct an impromptu buck saw. Similar to the wire bow saw, the wire buck saw uses tension to hold the wire in place. Having a buck saw allows the user to cut larger diameter logs and, potentially, standing trees.

But why stop there? Surely the wire buck saw is not the end of wire saw evolution. With some simple modifications, the buck saw can be turned into a mini-Alaskan Mill. For those unfamiliar with this tool, an Alaskan Mill is a jig that holds a chainsaw precisely in place to fabricate boards out of logs in remote locations. The boards can then be transformed into dimensional lumber for construction or crafting purposes. So let's cut to the chase (pun intended), and get into how this wire saw modification is created and utilized.

WIRE MILL CONSTRUCTION

Building a wire saw mill is simple, and doesn't require much in terms of skill or ability. The first step is to build a wire buck saw. Many folks use a wire bow saw to make constructing the buck saw easier; however, it is up to the builder to decide what will work the easiest. One key to this build is to keep the brace in the middle as straight as possible. When tension is applied to the buck saw by twisting the cordage, any bend in the cross brace will be exacerbated and will eventually lead to structural failure. Subtle bends are okay, and maybe even preferred in the sides of the buck saw. Think of the sides as two recurve bows facing each other. As tension is applied to the ends, they will be pulled straight, as the bend in the middle is forced against the brace. Any twist or imperfection will become apparent as pressure is applied, and it may be the case that an imperfect part will have to be replaced with one that does not fail under tension.

Constructing wire buck saws, like any other improvised tool, is a process of trial and error, and a great deal of patience needs to be applied. Green wood, or wood that is still alive, works better than wood that is dry, due to its higher ductility and tensile strength. Dry, dead wood is brittle and more prone to breaking under stress.



Lash the cutting guide to the desired depth of the dimensional rough-cut lumber.

Finding perfectly straight pieces of green wood in nature is not as easy as it sounds, but looking in the right places can be helpful. For example, the edges of forests typically have newer vegetation growing, such as saplings. Many tree species form fairly straight poles in the initial stages of growth, making them ideal candidates for saw components. Coniferous trees, such as pine or cedar trees, tend to make straight boughs as well. Ultimately, whatever is growing in the area will dictate what is available, but the main tenants still hold: straight as an arrow cross brace, straight or slightly curved sides.

Once the wire buck saw is complete, turning it into a mill is easy. Simply lash a cutting guide parallel to the cross brace and as far from the wire as the desired plank depth. The cutting guide should also be as straight as possible to ensure a more uniform depth while making the cut. On a creative note, set the cutting guide at an angle, so that one side is higher than the other, to make wedge-shaped planks. Lashing the cutting guide with banding wire helps prevent the guide from slipping or moving out of place better than fiber or nylon cordage, but either will work for the purpose of milling. It is also much easier to cut a uniform plank with two people working the mill versus one person, but the job can be done either way.

THIS IS A SIMPLE PROJECT THAT MIGHT SOUND MORE COMPLICATED THAN IT REALLY IS ONCE YOU BUILD AND USE IT.

USES FOR THE WIRE SAW MILL

Many things are taken for granted today, including how perfectly flat household goods are made. With a wire saw mill, simple comfort items become enhanced, such as stools for resting, plates for food or planks for sleeping. Those feeling the need for more thorough protection from the elements could make shingles or siding for shelters. Boxes for food or tinder storage, doors or bed frames—anything you can make with dimensional lumber is now a possibility.

By pulling the wire saw out of the bag, and using some fallen green timber, which is plentiful after the storm, a wire bow saw is quickly constructed. Using this tool, it is easy to gather the poles necessary for a more permanent shelter. With a survival home as a base of operations, the bow is used to construct a buck saw, so that larger logs can be partitioned into logs for firewood, and as a bulwark against prevailing winds. Having a fire and signaling source secured, the wire buck saw is fitted with a cutting guide and a few planks are cut from one of the firewood logs. In turn, these planks are propped up and used for a chair, providing a much-needed creature comfort and a psychological morale boost while waiting for help to arrive.

SHOPPING FOR A WIRE SAW

What to look for, what to avoid.

✖ Type the words “wire saw” into the browser of your choice, and a barrage of companies will immediately be competing for your hard-earned dollars. But you should avoid making the purchase indiscriminately. Some important factors to consider when choosing the perfect wire saw are the length, the aggressiveness and whether or not it has some kind of terminated end.

✖ Having a saw that is too short will result in having to make faster, more frequent cutting motions, resulting in fatigue. Too long and the wire mill will become impractical and unstable. Wires with aggressive cuts will be great for downward cutting pressure, but will be more difficult to control when milling dimensional lumber. Having a terminated end is a must to hold the tension when the saw is being tightened.

Patrick Diedrich is a retired military guy with a career background in combat reconnaissance and a land SAR trainer/volunteer who has a strong appreciation for preparedness. Having assisted in the recovery efforts of several catastrophic natural disasters across the country, he understands the importance of learning and cultivating lifesaving skill sets.

GETTING A MESSAGE OUT

Discover some innovative uses of ham radio.

BY ADEN TATE

THERE ARE SEVERAL WAYS YOU CAN USE A RADIO LIKE THIS TO GET IN TOUCH WITH SOMEONE.

YAESU
VX-6
SUBMERSIBLE

A VX-6R is one of the most versatile analog handy-talkies that you can own.

THOSE WHO ARE BRAND NEW TO THE HAM RADIO HOBBY OFTEN DON'T REALIZE THAT THERE IS SO MUCH MORE THAT CAN BE ACCOMPLISHED WITH THAT PIECE OF GEAR BEYOND SIMPLY KEYING UP THE MIC AND CHATTING WITH SOMEBODY ELSE. WHAT THEY HAVE IS AN INCREDIBLY VERSATILE TOOL THAT CAN ENABLE THEM TO COMMUNICATE IN MYRIAD WAYS.

In a disaster situation, having these options available can prove to be a boon. But what exactly are some of these creative uses for ham radio? Let's take a look.

SEND A CALL TO SOMEBODY'S PHONE

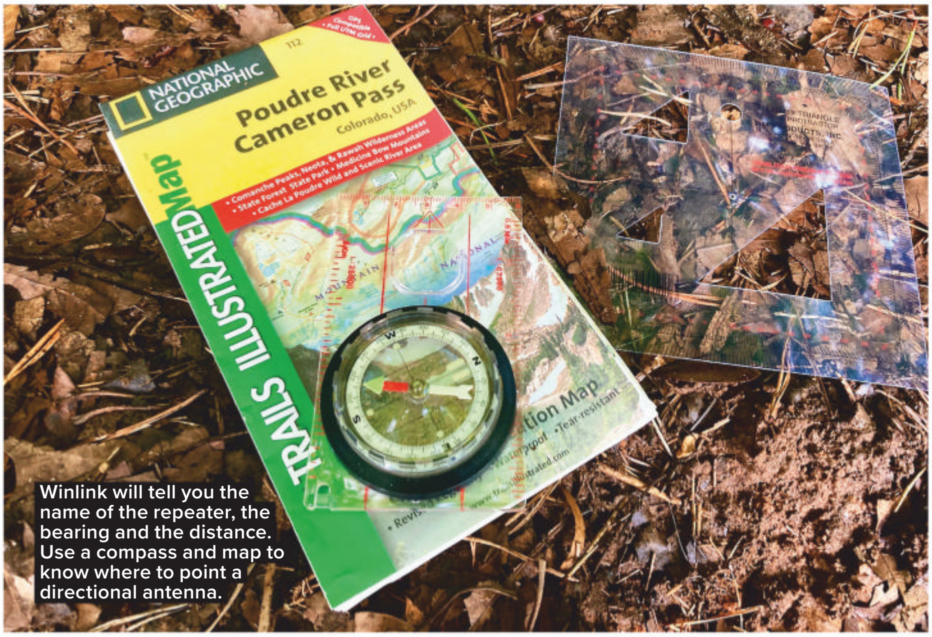
What do you do if you have a radio with you, but the person you need to contact does not? Perhaps your truck just broke down out in the mountains, your cellphone is dead, but

You can't always rely on being close enough to a tower to get a cell signal.

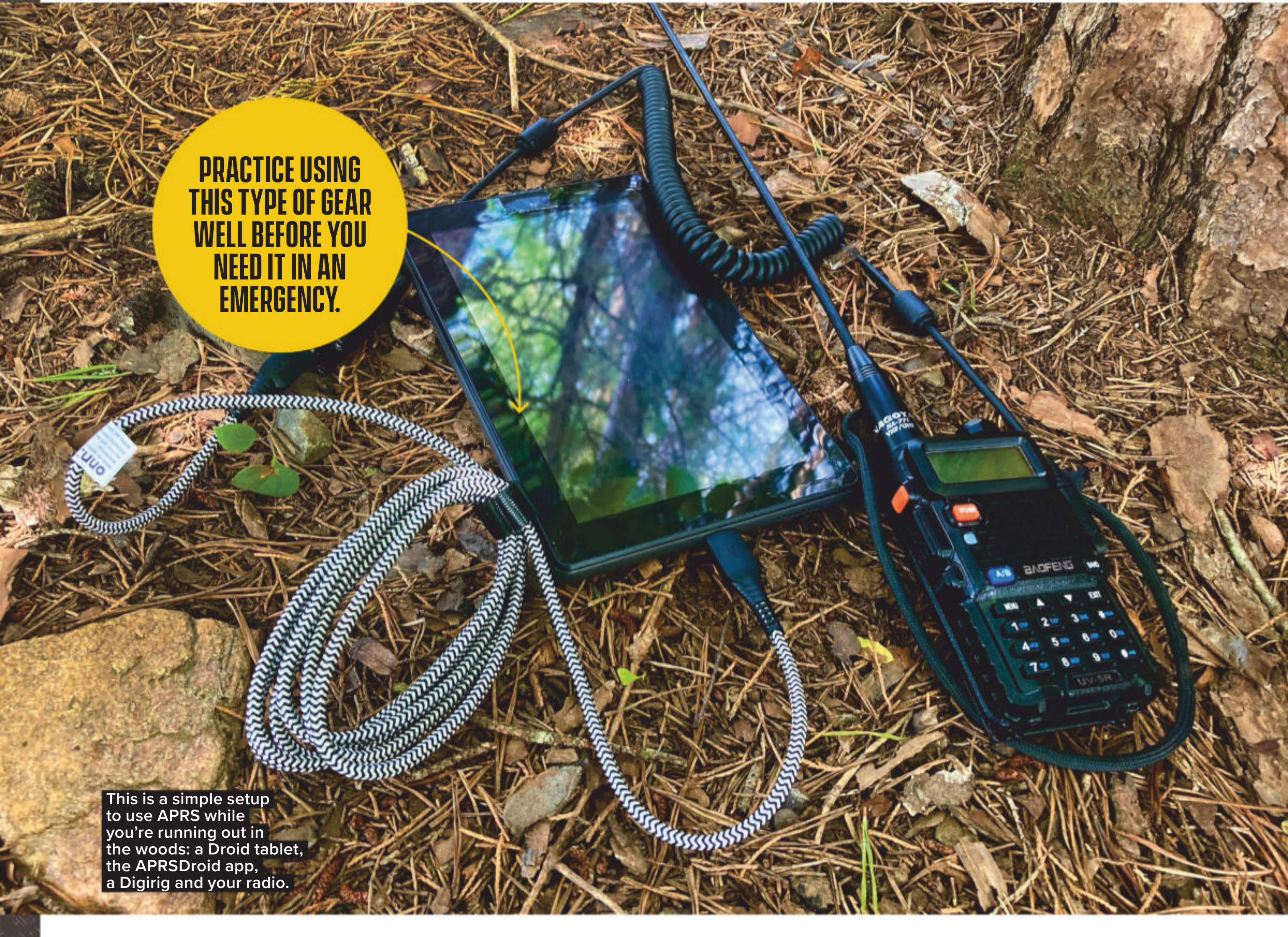
your mobile radio is still working, and you really need your son to come and help you out. In that case, you just may be able to call your son's phone through your radio.

To do this, you're going to use what is known as an autopatch. In this process, you will broadcast your phone message over the nearest autopatch-capable repeater.

Every radio has a different protocol to do this (look in your user manual), but the basic


NATIONAL GEOGRAPHIC
TRAILS ILLUSTRATED Map
Poudre River Cameron Pass
Colorado, USA

Winlink will tell you the name of the repeater, the bearing and the distance. Use a compass and map to know where to point a directional antenna.


BAOFENG
UV-5R

PRACTICE USING THIS TYPE OF GEAR WELL BEFORE YOU NEED IT IN AN EMERGENCY.

This is a simple setup to use APRS while you're running out in the woods: a Droid tablet, the APRSDroid app, a Digirig and your radio.

format is to punch in the code for autopatch in your region, type in the phone number you need to reach and then the call will be placed. Typically, you'll have roughly a three-minute limit to broadcast your call. If you use this method for other than an important reason, the hams in your community may get upset. They like being able to talk unimpeded about how many cups of coffee they drank that morning.

Provided you keep your message concise, it's relatively important, the call isn't related to business and you don't do this all the time, though, you should be perfectly fine.

SEND AN EMAIL

To do this, you're going to need your radio, a computer/tablet and the interface to connect the two together. Personally, I use a UV-5R, a laptop running Winlink and a Digirig to connect everything together.

I will give the caveat that this is extremely difficult to set up correctly within Winlink. It took me several hours to get everything squared away, and if you don't have a reliable antenna/ enough power, or don't have a Winlink node nearby, you're not going to be able to do this.

First, buy a Digirig with cables for your radio (I used the Baofeng UV-5R). Then, go to winlink.org to download Winlink Express to your computer. Using YouTube's "Beginners Guide to Setting Up Winlink" by KC9WWH will help. When setting up your Winlink account, you're going to need to use qrz.com/gridmapper to figure out what your grid square is. This will allow Winlink to know which nodes are close to your location.

Next, you need to download Sound Modem. Go to uz7.ho.ua/packetradio.htm to find the software that UZ7HO wrote. I downloaded soundmodem114.zip. Next, go to YouTube and watch Ham Radio Crash Course's video titled "Digirig Radio Interface." This video will show you the settings you need to apply to both Sound Modem and Winlink for the two software programs to coordinate with each other.

If you've done everything correctly, you'll be able to collect and send emails via your ham radio.

SEND A TEXT MESSAGE TO A PHONE

Let's say you are helping with disaster relief in Alabama after a bad hurricane. Your phone drops into the flood waters while you're helping a woman board a canoe, and you never see it again. However, you still have your working computer and radio close at hand. You need to send a text message back to HQ that you've picked up a passenger and are

THIS SORT OF PROJECT IS PRETTY INVOLVED AND COMPLEX, BUT YOU CAN REALLY EXPAND YOUR REACH WITH IT.

Ham radio is commonly used during disasters, but you aren't limited to radio-to-radio contact if you know what you're doing.

SUGGESTED HAM RADIO MODELS

Exploring a few different options.

One of the most popular ham radios is the Baofeng UV-5R, well known for its relatively inexpensive cost and basic functions. But if you're looking to upgrade beyond the basics, there are several other models worth considering, including the following.

Yaesu FT-60R
This is about as simple-looking a radio as you can find, but it's ruggedly built, receives from 108-520 MHz, and (provided you're hooking it up via Digirig to your computer), you should easily be able to utilize the methods we've discussed here. ($155, dxengineering.com)

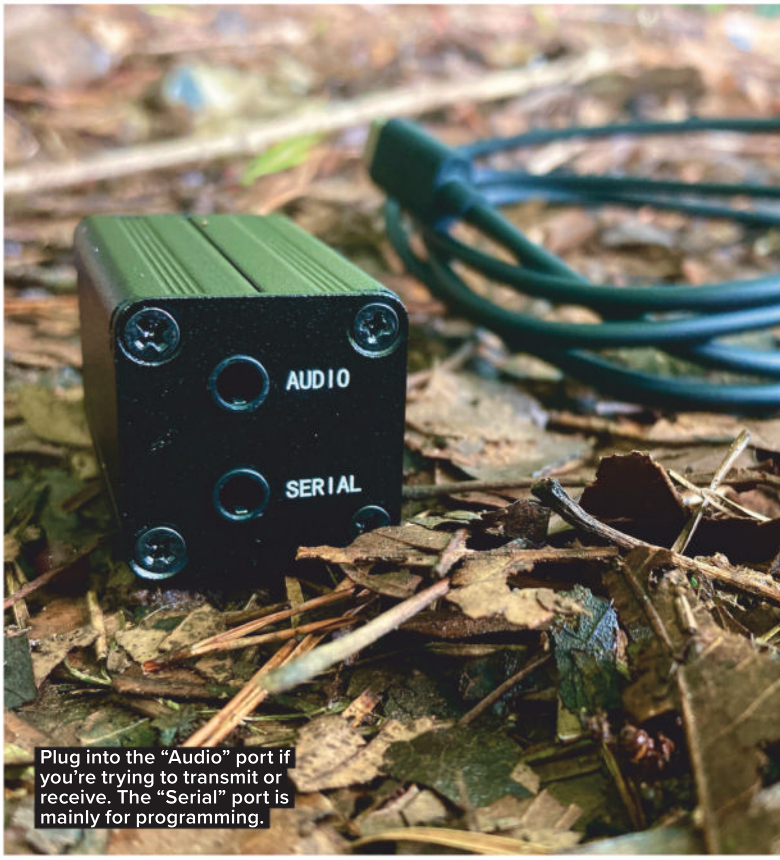
Yaesu VX-6R
A step up from the FT-60R, this is technically a tri-band radio. It comes loaded with pre-programmed frequencies. You can also listen to marine band, air band, shortwave broadcasts, NOAA broadcasts and analog EMS frequencies. In short, there are a lot of benefits you get out of this one little device. ($280; amazon.com)

TBR-119 Radio
If you have the money, the TBR-119 is one of the most versatile ham radios on the market. It does just about everything. There's a waterfall display, it covers a massive swath of the radio spectrum, and it's even designed to be thrown into a bag and carried out into the woods. ($2,250; readymaderesources.com)

Yaesu FT-60R

Yaesu VX-6R

TBR-119 Radio



Plug into the "Audio" port if you're trying to transmit or receive. The "Serial" port is mainly for programming.

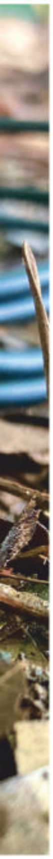
coming back. You can accomplish this through your radio.

To do this, you are going to need to download JS8Call at files.js8call.com/latest.html. Once you're there and have downloaded the appropriate software for your computer and hooked everything up to your radio, you'll be ready to start. Of course, you will need to have all this done before you begin your rescue mission.

For advice on how to tweak the settings of JS8Call, I highly recommend checking out ModernHam's YouTube video titled "Guide to Getting Started With JS8 or JS8Call Quick Start."

Once you have gotten everything set up the way you need it to be, go to the "Outgoing Message" box and type in the following: @ALLCALL APRS::SMSGTE :@1234567890 New passenger is on the way.

There is one space between ALLCALL and APRS:SMSGTE and three spaces between APRS:SMSGTE and the colon. The 1234567890 is where you would enter the phone number that will receive the text message. After you've typed in the phone number, enter a space and then type your message, which, in this case, is "New passenger is on the way."



Hit the “Send” button, and your radio will send a text message to the phone number you had entered. You won’t receive any confirmation that the message has gone through from the software, so there’s a bit of hope involved here, but if you have a good antenna with enough power, you should be good to go.

SEND YOUR GPS COORDINATES

Maybe you’re out hiking with your kids when somebody falls and breaks their leg. You’re unable to get cell service, but you have a ham radio and tablet with you. You could actually send out your GPS coordinates in such an emergency situation.

If you’re out and about, odds are you’ll want to bring an Android phone (you can pick up a cheap one at Walmart), a radio and the interface cable. You’re going to want to download APRSDroid to the phone. This will give you a mobile means of sending out your GPS coordinates. You could do this with a laptop and a Digirig, but odds are you want as mobile of a package as possible, and a laptop isn’t it.

The frequency you’re likely going to want to use is 144.39 MHz with a CTCSS of 100. This is what Automatic Packet Reporting System (APRS) creator Bob Bruninga has recommended.

A radio can truly be a lifeline in many cases.

BEFORE YOU GO

Your radio is something of a Swiss Army knife. You just need to know how to use it, and learning these methods can take a bit of time and practice. Grab your radio, download one of the above programs and start experimenting. Who knows—someday your skills could very well save a life.

The author mainly uses a roll-up J-pole antenna purchased on eBay. The paracord and stick are what he throws over a tree limb to hoist the antenna up.

Aden Tate is the author of *The Faithful Prepper: A Christian’s Perspective on Prepping* as well as the creator of the “Let’s Survive Apocalypse Together” series of greeting cards at selfrelianceandsurvival.com.

Loose change adds up quickly, provided you don't filch from it for coffee or sweets.

FINANCIAL PREPS

Establishing an emergency fund.

BY JIM COBB

ONE OF THE SINGLE MOST IMPORTANT THINGS YOU CAN DO WHEN IT COMES TO BEING PREPARED FOR LIFE'S CURVE BALLS IS TO SET ASIDE SOME SORT OF SAVINGS. WHERE YOU KEEP IT IS UP TO YOU. WHETHER YOU OPEN A BANK ACCOUNT OR PUT CASH IN A SAFE, THE IMPORTANT THING IS TO HAVE MONEY YOU CAN ACCESS QUICKLY.

Another thing I've learned over the years is that the less money you have, the bigger the impact even small emergencies can make. For many people, a sudden $200 car repair can send their entire household budget into a downward spiral. When businesses began announcing shutdowns as the COVID-19 pandemic was ramping up in the United States, many people expressed concern about being able to pay their bills after missing work for just a few weeks.

It can be difficult to sock money away, especially when the budget is already tight. But there are some things you can do to cut expenses and free up a little dough to put away for a rainy day.

Full disclosure—not every tip here will apply to you. That's just how this sort of thing works. There is no one-size-fits-all answer. But hopefully, you'll find at least a couple of ideas that will work for your individual situation.

GROCERIES

It's simple math: Every bit of food you can grow yourself is one less thing you'll need to buy at the store. If you don't have space for a large garden, plant a small one. If you don't have space for a small garden, you can still grow food in pots and other containers. Many cities and towns offer space for community gardens, so that's another option to explore if you don't have yard space.

Make no mistake, growing food is hard work. But when your efforts pay off with tomatoes, carrots, lettuce and other produce, you'll appreciate the reduction in your grocery bill. Who knows? You might even end up with enough excess that you can trade with neighbors and friends—zucchini and squash for snap peas and potatoes— giving both households a bit more variety for dinner.

The downside of fresh produce is that it doesn't stay fresh forever. So, coupled with growing food is learning how to make it last as long as possible. Canning is the tried and true method that's been in use for generations. While there is some degree of investment needed at the outset for the equipment, you'll earn that back in grocery savings within a short period of time. You might even be able to borrow a pressure canner from a friend or family member, with lessons in how to use it properly thrown into the bargain, in exchange for some of the veggies you've grown. Or, if you're the experienced canner, make that offer to neighbors, friends and family members.

Raising chickens is another way to help offset the family food bill, especially if you typically go through a lot of eggs. If you're able to come to terms with turning the non-producing chickens into a meal, all the better. But even if you can't make that distinction, all is not lost. Any excess eggs may be traded with neighbors. Many people also sell their eggs, although in some areas the market is pretty flooded with them as of late.

AVOID WORK-FROM-HOME SCAMS

It can sound so appealing: Make big money from the comfort of your living room! Easy work! No experience necessary!

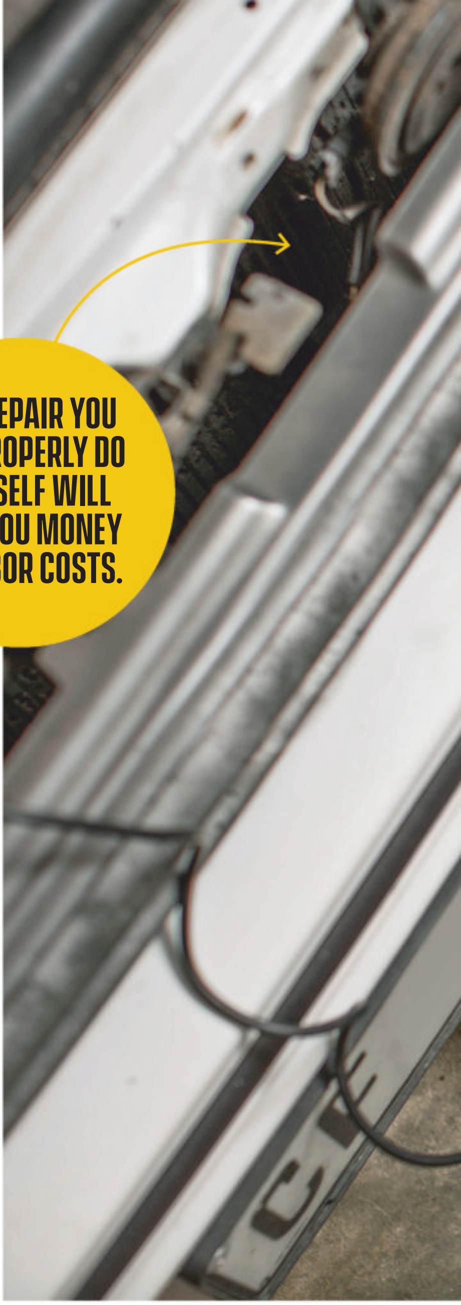
While it may sound like an amazing opportunity, there are an incredible number of scams out there disguised as work-from-home opportunities. Other jobs are technically legit but rarely turn out to be all they promise when it comes to income. Here are some red flags:

✖ **Pay to Play** Money should flow from the employer to the employee. That's how work works. If you are required to purchase a starter kit of something or pay some sort of initiation fee, think twice.

✖ **Engage Others** If part of the deal is for you to recruit friends and family to the cause, with promises that you'll earn money on work they perform, walk away. Do you want to work for a company that will hire literally anyone you know?

✖ **Fuzzy Details** Ads that are so vague you can't even tell what the job is should be a clue that something's not right. There might be a good reason why the company isn't revealing its own name publicly.

✖ **Pressure** Any company that badgers you to accept the job right away should be avoided. There's no legit reason why a company would use high-pressure sales tactics to land employees.



ANY REPAIR YOU CAN PROPERLY DO YOURSELF WILL SAVE YOU MONEY ON LABOR COSTS.

VEHICLE REPAIRS

One of the biggest reasons for a sudden unplanned expense is vehicle breakdowns. All too often, it is a catch-22. You need to repair the car so you can get to work, but you can't pay for the repair until you can get to

Even if you're not able to crawl under the car yourself, odds are there are some things you can still do to save a few bucks.

your job. Engines used to be a lot easier to fix at home. They were simpler and there was a lot more space under the hood so you could reach everything. Today, there are so many add-ons and extraneous components, some repair work is nearly impossible to handle in the driveway. But there are still things the average person can handle with simple hand tools and the right parts.

In most cases, the largest part of the bill from any repair shop is labor. Odds are there will also be a little markup on the cost of the parts. Any repair you can do yourself stands to save you quite a bit of money.

One of the first things you should buy after purchasing a vehicle is a repair manual for it. Haynes or Chilton are two of the most common publishers of these, though there are a few others. Don't count on picking up the manual at the library when you need it as Murphy's Law dictates that's exactly when someone else will have already checked it out.

You'll need a set of tools. While they aren't cheap by any means, you can put together a decent kit for not too much money by shopping at rummage sales and thrift shops. At a minimum, you'll need:

- Pliers
- Box and open-end wrenches (SAE and metric)
- Socket wrench and sockets (SAE and metric)
- Screwdrivers (various lengths, slotted and Phillips)
- Torque wrench
- Hammer or mallet (for helping to loosen stubborn bolts)
- Oil filter wrench

I also recommend a small spotlight, ideally

One of the first steps toward saving money is understanding where it is going each month. Track your expenses, then set up a budget and stick with it.

one with a magnetic base, so you don't have to rely on someone else to hold a flashlight. A headlamp might also suffice. Other supplies that don't really fall into the tool category are an oil funnel, drain pan, nitrile gloves, floor jack, jack stands and ramps. Again, it will cost some money at the outset to acquire these things, but you don't necessarily need them all at once. Pick them up as you find them for a reasonable price.

When it comes to vehicles, proper maintenance is the key to avoiding problems. Changing your oil as recommended is one of the best ways to keep your vehicle operating at peak performance. This isn't a difficult procedure, though as with any vehicle repair, expect to get dirty. Replacing brake pads and even calipers isn't overly complicated. Take your time and follow the steps outlined in the manual. Watching a few YouTube videos ahead of time will help you learn some tips and tricks, too. Just do a search for the year, make and model of your vehicle along with the repair you're about to attempt.

CREDIT CARD DEBT

This is the biggest issue facing many families—I know it was for my wife and myself back in the day. When we were just starting out, times were tough and we did our grocery shopping with a list and a calculator. Every item put into the cart was added to the total. When we hit our limit, it was either put some things back so we could afford others or just head to the cash register. This sometimes meant we had to go without things we wanted so we could buy the things we truly needed. Then, the store we frequented started accepting credit cards. That was a game changer—but as it turned out, not in a good way.

It took us years to overcome bad credit decisions, but we're all the better for it. Doing so wasn't easy. It took a lot of work and sacrifice. Here's the approach that we used:

First, we called every bank that issued our credit cards and asked them if there was anything they could do to reduce the interest rate or otherwise help us out. It never hurts to ask. We found a couple of them were willing to temporarily drop the rate a bit, which saved us a little money.

Next, we picked the card with the lowest balance and put every nickel we could afford toward it, while still paying the minimum due on everything else. Once that card was paid off, we moved to the next one and did the same thing. It took a while, but eventually we got them all paid. Along the way, we closed several of the accounts, keeping one or two cards for emergencies. As time went on, our credit scores went up.

Nothing good comes easy and saving money is no exception. It can mean going without even simple things for a time. We gave up cable, going out to eat and vacations while we were working our way to a debt-free life. I'll admit, it wasn't a lot of fun. It was, however, definitely worth it.

> **CREDIT CARDS AREN'T EVIL IF YOU'RE DISCIPLINED ENOUGH TO USE THEM TO YOUR ADVANTAGE AND MAKE THEM WORK FOR YOU.**

CHAPTER 4

EQUIPMENT

THE RIGHT TOOLS AND GEAR WILL MAKE CHORES EASIER TO MANAGE AND CONSERVE YOUR ENERGY.

NEW PRODUCTS

1

2

WATER IS A SURVIVAL NECESSITY AND THIS TANK WILL STORE A LOT OF IT!

3

1

SPEED STASH

You can never have enough pockets, and the Speed Stash allows you to add one instantly to any sternum strap on a pack. It's just large enough for your cellphone GPS device, wallet or similar gear, keeping it right at your fingertips rather than forcing you to dig through pockets. The Speed Stash measures 7 inches by 4 inches and is 2 inches thick. Hook and loop attachment makes it easy to use.

- **MSRP** $30
- **URL** *Matadorup.com*

2

PRO WATER TANK

This portable tank has a capacity of 20L, or 5.2 gallons. It includes a black powder coated tap, making it easy to dispense water into containers. It will accept any ½-inch fitting. The tank is made of food-grade polyethylene and is BPA-free. It measures 22 inches by 14 inches and is 6.5 inches high. It weighs just shy of 5 pounds.

- **MSRP** $79
- **URL** *Frontrunner outfitters.com*

3

HEX BIT DRIVER TOOL

This pocket-size tool is designed for quick takedown and assembly, with a comfortable, ergonomic grip. A magnet in the driver secures the bit. The compact design is perfect for pocket carry, and it has texturing so it won't slip while you're working. The brass driver has a ball-bearing spinner to help keep everything moving smoothly.

- **MSRP** $26
- **URL** *Crkt.com*

The latest and greatest gadgets and goodies.

BY BSG STAFF

A HEADLAMP KEEPS YOUR HANDS FREE WHILE LETTING YOU SEE WHAT YOU'RE DOING.

5
Black Diamond
STORM

6
CAMPCRAFT
- FIELD COOKBOOK -
JASON A. HUNT
Jamie L. Burleigh & Greg Laughlin

4

DELTA 1 TANTO KNIFE

This is a compact fixed blade, just 6.3 inches overall. The CPM-D2 steel keeps a great edge on the 2.1-inch blade. There's a ring at the end of the handle to help retention, as well as assist in removing the knife from the included Kydex sheath. Scout carry straps on the sheath keep it on your belt. And at just 3 ounces, you'll never know it's there—until you need it.

- **MSRP** $150
- **URL** *Dlttrading.com*

5

STORM 450 HEADLAMP

Fueled by three AAA alkaline batteries (included) or the rechargeable BD 1500 Li-ion battery, this will light up the night for a long time. On the maximum setting, it blasts out 450 lumens, but it can instantly transition to dimmed power. You can choose to use red, green or blue lights for night vision purposes.

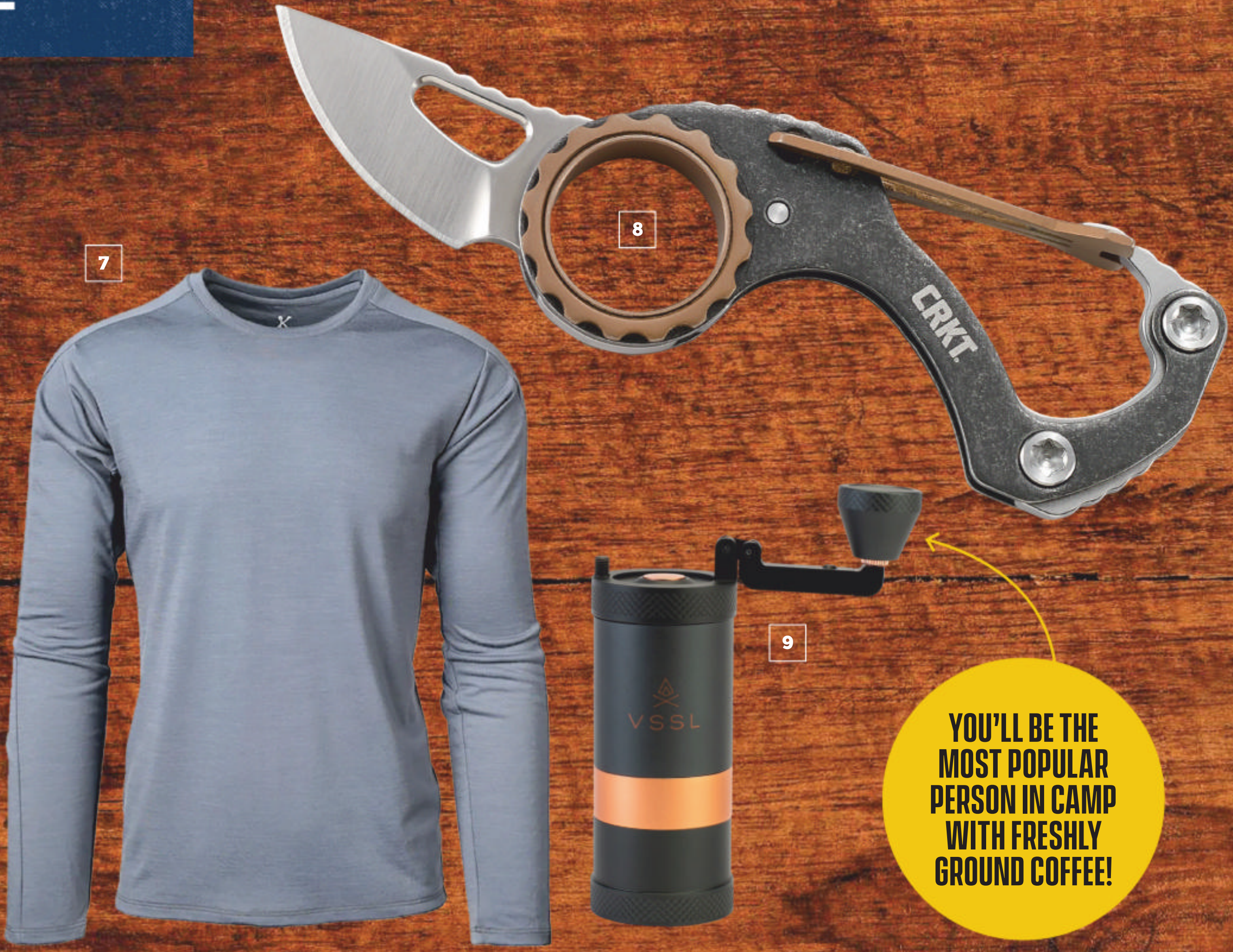
- **MSRP** $60
- **URL** *Blackdiamond equipment.com*

6

CAMPCRAFT FIELD COOKBOOK

This is the go-to guide for bushcraft-inspired meals utilizing wild game. It includes everything from possum fricassee to coyote chili to hobbit pots and apple dumplings. There are over 40 recipes that you can make over the fire or at home. The cookbook also features information on campfire cooking techniques.

- **MSRP** $15
- **URL** *Campcraft outdoors.com*



YOU'LL BE THE MOST POPULAR PERSON IN CAMP WITH FRESHLY GROUND COFFEE!

7

ZILER MERINO LONG-SLEEVE TEE

This versatile shirt is made with a Merino wool blend fabric, a natural material that paradoxically keeps you cool in the hot weather and warm when it's cold. That makes this long-sleeve T-shirt perfect whether you're biking in the summer or as a base layer when you're camping in the winter, so you'll use it all year long. It is comfortable and built to last.

- **MSRP** $89
- **URL** *Kitsbow.com*

8

COMPANO KNIFE

This key-chain–sized carabiner holds an ultra-compact folding knife. It has a high-carbon steel blade that will take an edge and keep it. The blade is small, less than 1.5 inches, but provides excellent cutting ability for a range of tasks. The carabiner attaches just about anywhere, keeping the knife convenient for you. This is a great option for those seeking a small-size EDC knife.

- **MSRP** $44
- **URL** *Crkt.com*

9

JAVA COFFEE GRINDER

There's nothing like fresh coffee first thing in the morning at camp, and even better if the beans are ground on site. The Clip and Flip lever serves as a carrying handle and extendable crank for grinding. The top pops off with the push of a button. Stainless steel bearings ensure a consistent grind. Just 60 seconds of grinding produces enough for a cup.

- **MSRP** $160
- **URL** *Vsslgear.com*

10

11

KEEP EVERYTHING ORGANIZED SO YOU CAN FIND WHAT YOU NEED WHEN YOU NEED IT.

12

ARGALI
USA
S35VN

10

ARGO BLANKET

This is a two-person blanket that stuffs down into its own pocket for extreme packability. It has soft-to-the-touch polyester lining that's plush and cozy. There are snap loops that you can use to incorporate the blanket into your overall sleep system. There's also a draw cord at the bottom to reduce drafts. This is perfect if you're looking for warmth in a very compact, easy-to-carry size.

✖ **MSRP** $110
✖ **URL** *Thermarest.com*

11

DOUBLE ADMIN POUCH

This model is larger than the company's standard admin pouch, measuring 9 inches by 6 inches and 1.5 inches thick. It has MOLLE webbing front and back, four open stash pockets and two additional strips of elastic webbing above each pocket. It's excellent for knives, cords, pens and so much more. This pouch is a great organizational tool, no matter where you travel.

✖ **MSRP** $129
✖ **URL** *Nutsac.com*

12

CARBON KNIFE STEALTH EDITION

This is a lightweight hunting knife that can do it all. It has an ion bond coating that provides protection from even the harshest elements. It is made from S35VN stainless steel and has textured G10 removable handles, which gives you the feel of a full-handled knife but the weight of a skeletonized one, at just 1.8 ounces.

✖ **MSRP** $229
✖ **URL** *Argalioutdoors.com*

SLINGSHOT

WITH A LITTLE PRACTICE, YOU'LL BE ABLE TO FILL THE DINNER POT EASILY USING THIS!

It might seem like a child's plaything, but these have been used for ages to bring down small-game animals.

SAVVINESS

From a kid's toy to a must-have tool.

BY MICHAEL D'ANGONA

THIS Y-SHAPED OBJECT WAS FOUND STUFFED IN THE BACK POCKETS OF BOYS EVERYWHERE FROM THE 1940S THROUGH THE 1980S. IT WAS ADVERTISED AS A TOY, WITH KIDS LINING UP TIN CANS ON A FENCE AND PELTING THEM WITH PEBBLES. IT WAS MOSTLY HARMLESS FUN.

However, times have changed. The kid's toy of yesteryear has evolved into something much more useful today for both personal defense and for acquiring game when deep in the outdoors. Its design is more efficient, the materials are more durable and the ability to hit a target squarely on point has a much more effective result—which, of course, is the ultimate goal.

Here we trace back the origins of this simple toy, tool, weapon or a combination of all of these things and reveal its evolution into a highly useful item for the outdoorsman and survivalist of today.

HISTORY OF THE PEASHOOTER

Though a slingshot may seem as if it could have been around for centuries, it required a relatively modern material—vulcanized natural rubber—to effectively launch a projectile. So, it can be said that with the invention of this necessary rubber product in 1839, by Charles Goodyear, the slingshot was born. Early slingshots took the appearance that many people recall as the quintessential slingshot design—a forked tree branch with twin elastic bands and a small pouch to hold the projectile. This style was associated early on with troublesome youths, as vandalism became common with its use. However, as the slingshot became commercially produced in the early 1940s, it made its way into the mainstream and shed its negative undertones to become ubiquitous throughout numerous households across America.

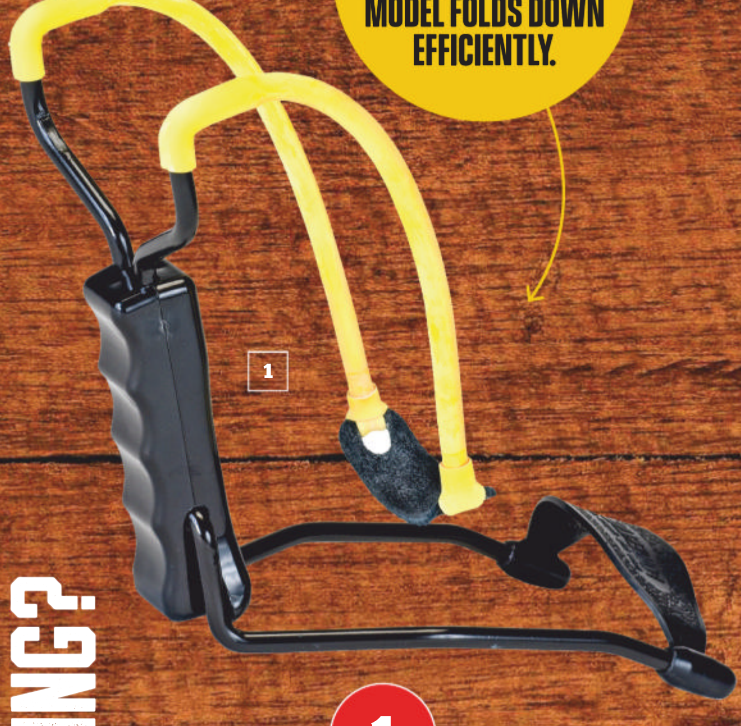
Wham-O, founded in 1948, offered slingshots made of ash wood with flat bands. This style was used for hunting small game and had a draw weight of nearly 45 pounds, so it was hardly a kid's toy. Additionally, the Wrist Rocket from Saunders Archery in Columbus, Nebraska, offered an innovative bent alloy rod design that used the wrist as support against the powerful torque of the bands. The Wrist Rocket also differed from the Wham-O in that it utilized tubular surgical bands instead of flat bands, which were noticeably stronger and less likely to break.

MATERIALS & AMMO

Slingshots can be made with numerous types of materials. The framework of a slingshot, if one wants

LOOKING TO START SHOOTING?

These models offer variety, versatility and hours of fun!



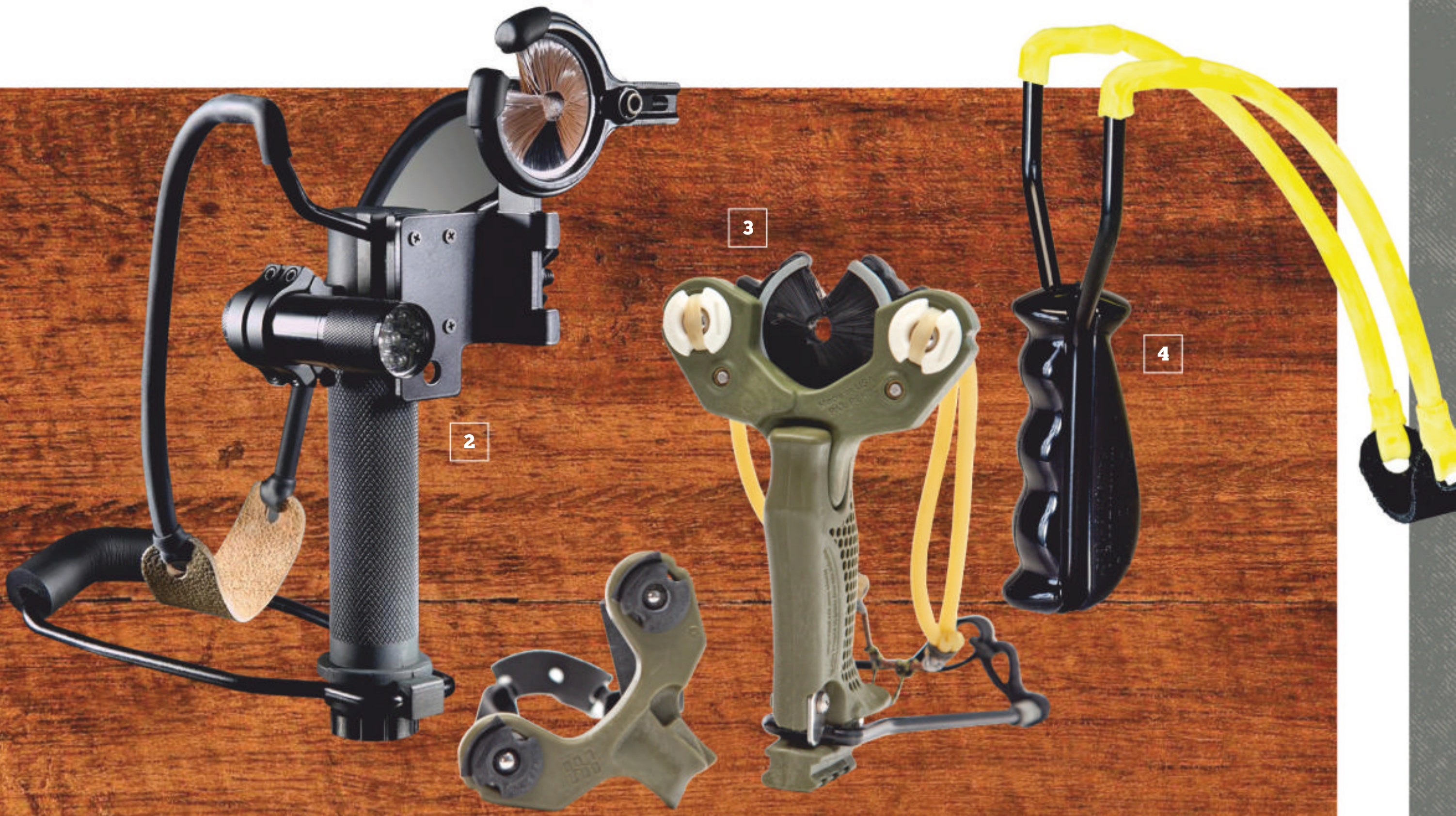
AFTER YOU'VE CAPTURED YOUR GAME, THE DAISY MODEL FOLDS DOWN EFFICIENTLY.

1

DAISY MODEL B52 SLINGSHOT

Daisy steps up with a twist on the traditional slingshot by adding a flexible wrist brace for improved accuracy and less arm fatigue. All the components of a great slingshot are here: a sure-grip handle, extra-strong latex tubes, a durable ammo pouch and the reliability of the Daisy brand for both quality and the promise of a fun time shooting this old-time favorite. Grab a handful of ball bearings and you're good to go. Best of all, this slingshot folds down for easy carry when the shooting is over.

- **MSRP** $11
- **URL** *Daisy.com*



2

SURVIVAL SLINGSHOT ULTIMATE – RED LASER

This slingshot offers everything except the kitchen sink. It features top-of-the-line construction, high-quality parts and exceptional accuracy that combine to create an ideal hunting weapon. It includes a tactical light, whisker biscuit and laser sight for on-the-mark targeting every time. There's also an integrated compass, mini-survival kit and the ability to shoot full-sized arrows for maximum versatility.

- **MSRP** $241
- **URL** *SurvivalSlingshot.com*

3

HAMMER XT SLINGBOW HEAVY DUTY

This slingshot means business! It's built extra-tough, offers versatility with ammo, using either traditional steel shot or full-sized archery arrows, and is top-notch when it comes to accuracy in practice and in the field. Its chunky hammer grip with built-in wrist brace ensures a steady hold, while its tubular bands stand up to repeated use shot after shot. When you really need versatility and dependability, the Hammer slams down hard!

- **MSRP** $80
- **URL** *Simple-Shot.com*

4

DAISY MODEL F16 SLINGSHOT

This entry-level slingshot is an excellent choice to introduce you to the sport without breaking the bank or being overwhelmed by a plethora of accessories. Its simple and traditional design allows both the beginner and the pro alike to go back to the basics and enjoy the fun of shooting. Its molded handle allows for a steady shot, while solid steel forks will hold up to hour after hour of repeated use. Stuff this baby in your back pocket and head out for an afternoon of practicing marksmanship.

- **MSRP** $9
- **URL** *Daisy.com*

to be economical without compromising quality, can be made from hardwoods like dogwood, hickory, maple or oak. These wood choices will stand up to the pressure exerted on the "Y" section of the unit, an important consideration, especially if you have extra strong bands that create a lot of torque. Woods of these types will also stand up to the elements if you choose to take your slingshot deep into nature's backyard on a regular basis. Repeated use and constant exposure to wet and dry conditions will compromise the strength of softer woods like pine, spruce or cedar, so stay away from these when possible. Synthetic materials are also an option if one is purchasing a slingshot online or in a brick-and-mortar store. Strong and durable aircraft aluminum, steel with plastic casing and solid steel are used in a variety of slingshots for hunting, fishing and self-defense.

The bands of the slingshot that provide the punch are typically 100% natural latex, which offers both power and less physical breakdown over time when compared to synthetic rubber. As previously mentioned, both flat bands and tubular bands are used for the power to launch the projectile, depending upon the manufacturer, the design and the main purpose of the slingshot itself. Flat bands tend to provide a faster shot with less draw weight but tear more easily, while the tubular band versions hold up to extensive, repeated use, but sacrifice speed. Tubular bands also need a bit more strength than flat bands to pull back for each shot and this could lead to more arm fatigue when shooting for long stretches of time.

GRIMWORKSHOP.COM
Made in Texas
Workshop
www.grimworkshop.com

This compact slingshot unit and accessories are excellent for survival kits due to its small size.

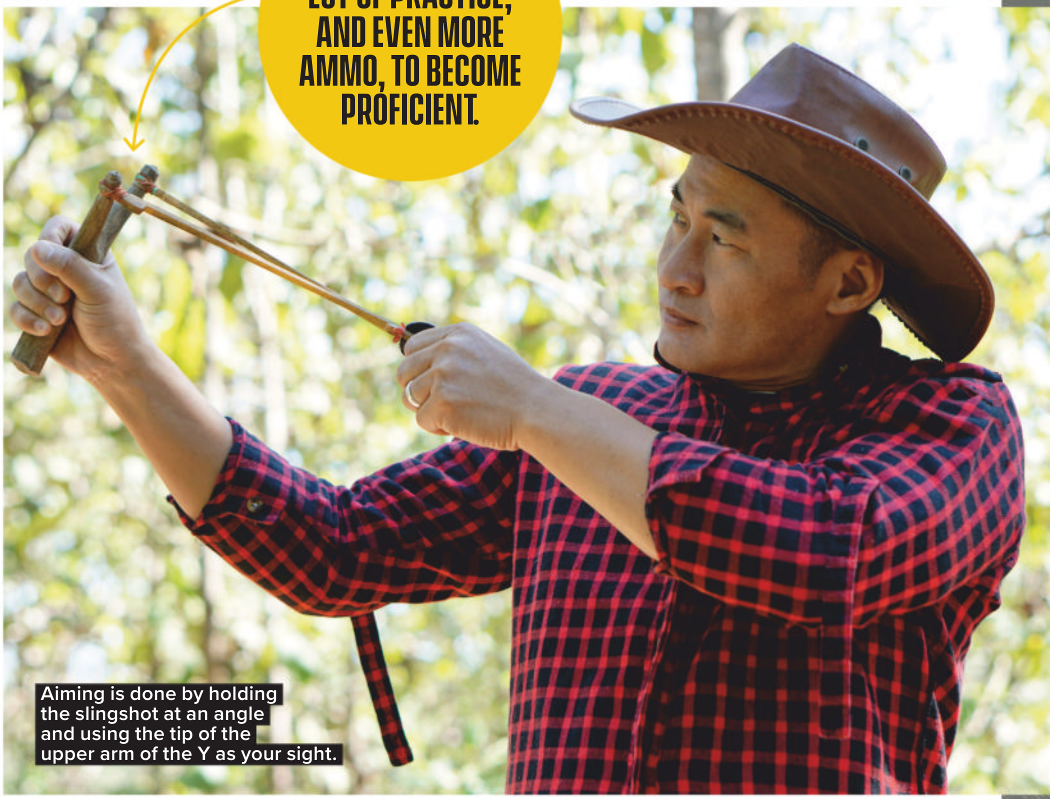
For homemade slingshots over the past decades, kids would literally pick up small pebbles to use as ammo. The more spherical, the better, and for simple target practice—say, tins set upon a tree stump—these worked perfectly fine. However, ammo today comes in a variety of forms. Steel balls, lead balls, plastic balls and glass marbles are all used, depending upon needs and personal choice. Glass doesn't rust or corrode like steel ammo and tends to project with higher speeds than other ammo types.

However due to its lighter weight, glass projectiles don't provide as much power on impact as the others. Steel offers a balance of both speed and power, while lead is usually the heaviest ammo and can cause the most damage to the target, yet it tends to deform the quickest. For most lovers and longtime practitioners of the slingshot, anything that will fit into the pouch is prospective ammo.

PRACTICE AND ACCURACY

Simply put, more practice will equal better accuracy, which can be applied to shooting almost any weapon. However, there are some tips to help you start off strong and avoid some common mistakes that would ultimately need to be corrected. First, the more spherical your ammo, the better its aerodynamic properties will be, and thus your targeting will be much better. Lead shot that's misshapen or pick-off-the-ground pebbles will not help your aim.

Second, when you aim at a target, focus on only one part of the can, perhaps a color or a single word or letter. This can reduce your "miss" zone and by doing so will allow you to hit your target. Finally, hold the slingshot with your stronger hand. This way you'll be able to control the slingshot better after the shot releases and reduce its tendency to jerk forward, which, ultimately, throws off your accuracy.



Aiming is done by holding the slingshot at an angle and using the tip of the upper arm of the Y as your sight.

IT WILL TAKE A LOT OF PRACTICE, AND EVEN MORE AMMO, TO BECOME PROFICIENT.

HUNTING APPLICATIONS

Although slingshots were marketed as toys decades ago, they have also been developed as key hunting tools, as well as weapons for self-defense against two-legged threats. In order for a slingshot to be effective in hunting small game, it must accomplish several things.

First, its frame needs to be able to support bands that can fire hunting weight ammo. Ammo can range in size from 15⁄16-inch to 15⁄32-inch and can come in both steel and lead forms. Ideally, choose an ammo size that will offer the best performance based upon the prey you intend to shoot.

At the low end of the spectrum, the smallest ammo sizes are more for practice than for actual hunting. The next few sizes are well suited to take down small rodents, reptiles and squirrels. At midrange, larger rabbits and pheasant can be taken down, and with slightly large ammo, turkeys can be bagged. However, and this is very important, using ammo that's too small will be ineffective to land a kill shot due to size and weight, while at the opposite end of the chart, ammo that is too large will be heavier and will greatly reduce your range, making most hunting somewhat ineffective. This is absolutely something that will take practice and time for you to ascertain.

VIABLE SELF-DEFENSE WEAPON

Like a bow and arrow set, a slingshot is an ideal survival and self-defense weapon that is useful against those out to either harm you or take what you have.

As long as you have access to small pebbles (which most people do) then your ammo capacity is nearly limitless. Spherical ball bearings may shoot straighter or even faster, but in a pinch, a pebble traveling at 150 miles per hour will surely do some damage to an adversary.

In addition, most slingshots are slender and compact enough to fit inside a jacket pocket, an emergency bug-out bag or to be stored in a vehicle's glove compartment. Finally, repairs to your slingshot are not difficult, even for those of us who are not very adept at tinkering. Your supplies can be improvised, and many replacement parts can be either found simply lying around the home or purchased with relative ease.

FOR FOOD, FUN OR DEFENSE

No matter what your needs are when purchasing a slingshot, this versatile tool or weapon is as valuable as it is simple to operate. With continued practice, your shots will become well-grouped and on target. Add to its importance for hunting or defense that it's also simply a lot of fun to shoot—after all, few can deny the satisfaction of seeing that aluminum can launch into the air after a successful shot!

SHIELDING FROM THE COLD

Shelters that offer safety and security.

BY MICHAEL D'ANGONA

Winter camping can be a lot of fun, if you're prepared for it.

MOTHER NATURE CAN BE BRUTAL. OF COURSE, SECURED WITHIN YOUR HOME, RAIN, SNOW AND HIGH WINDS DON'T NORMALLY DO ANY SIGNIFICANT DAMAGE, AND THE PEOPLE INSIDE USUALLY DON'T SUFFER INJURIES DUE TO THE BAD WEATHER. THIS ISN'T THE CASE WHEN YOU'RE DEEP IN THE OUTDOORS AND HARSH, WINTER-LIKE CONDITIONS ARE SWEEPING ACROSS THE LANDS.

In this situation, a portable shelter not only offers a respite from the brutal elements, but it's an absolute must to escape from frostbite and possible hypothermia. These shelters come in many forms, from traditional "A" frames, to bell-shaped, geometrically designed half-spheres that inflate with a pump. The keys to selecting the correct one for you lie in choosing the one suited for your intended environment, the number of expected occupants, the ease of assembly and, most importantly, which one will give you the feeling of comfort when you're far away from home.

But like almost all products on the market today, there are shelters that run the gamut from poor craftsmanship and quality, to mediocre, to much better and, finally, the cream of the crop—those that can do the job in both style and performance. A cross-section of some of the best follow. These virtual lifesavers can mean the difference between barely holding on through the night in the frigid cold or sleeping soundly in warmth, comfort and complete peace of mind.

THE CAVE XL 4-SEASON TENT

When it's time to get serious for cold-weather expeditions, you'll need a tent that can hold up to the rigors of intense temps, high winds and unstable ground. The Cave tent can tackle all that and more. Its geodetic structure offers quick inflation—just unroll, inflate and you're done. In frigid conditions, you can't afford to stay out in the cold for long. This uniquely designed tent offers comfortable room for three, and includes pegs, guy ropes, a pump adapter, gear loft, repair kit and pack sack for transport wherever the adventure bug bites.

Specifications

- Capacity: 3 people
- Multi-chamber safety system
- One-pump system
- Inflates for use in under one minute
- Overall weight: 13.67 pounds

✖ **MSRP** $1,185
✖ **URL** *Heimplanet.com*

ULTAMID 2 ULTRALIGHT PYRAMID TENT

Easy set-up, proven pyramid-style design and ideal for harsh outdoor conditions, the Ultamid can be your little home away from home when trekking through Mother Nature's backyard. This tent is tough, with a waterproof shell, multiple pitch options and a stable base when the ground beneath is anything but flat. The unit is incredibly lightweight, which reduces carry fatigue and allows for easy transport over not-so-easy terrain, and sets up effortlessly using adjustable trekking poles. The complete package includes the tent, eight guy lines, 100 feet of additional UHMWPE core guy lines and an extra-large stuff sack for storage when not in use.

Specifications

- Capacity: 1-2 people
- Dual peak vents with "no-see-um" mesh
- Fully taped, durable seams
- Water-resistant, Dyneema outer shell
- Ultra-lightweight design, weighs only 1.17 pounds

✖ **MSRP** $825
✖ **URL** *HyperLiteMountainGear.com*

MINI REGATTA BELL TENT

This bell-style, cold-weather-use tent offers high quality construction, excellent accessibility in and out of the structure, and the dependability to withstand the hardships of the outdoors with ease. Its two-layer windows and doors allow for cool air to circulate and ventilate the tent, all while keeping nature's critters both large and small out, allowing you a great night's sleep. Additionally, the sewn-in ground sheet keeps sleep-ruining rainwater from seeping inside. The tent package includes the poles, floor, tool kit and carrying bag for easy transport and storage.

Specifications

- Capacity: 2 people
- Water-repellent, mold- and UV-resistant
- Double-stitched seams with reinforced corners
- Roof vents for maximum ventilation
- Premium mesh on doors and windows

✖ **MSRP** $500
✖ **URL** *WhiteDuckOutdoors.com*

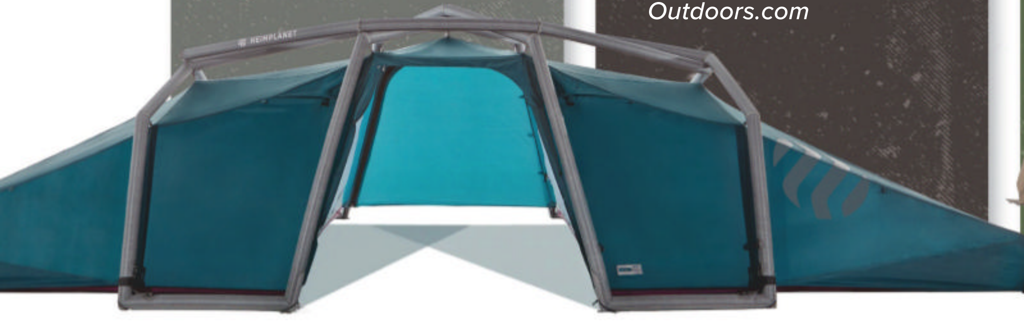
NIAS TENT

This multi-person tent combines a tunnel design with geodesic construction, which allows for both great flexibility and superb stability in harsh outdoor conditions. It's less-than-one-minute pitch time means erecting your shelter faster and getting some much-needed shuteye a lot sooner. The Nias is weatherproof, offers a multi-chamber system to reduce damage repairs, and has four closable air vents for optimal circulation and twin entrances for both privacy and convenience. The tent kit includes the tent, pegs, guy ropes, pack sack, pump adapter, gear loft and mini-ground sheet.

Specifications

- Capacity: 4-6 people
- Extra stiff and resistant polyester flysheet for extreme durability
- Only one-minute set-up time
- Central vestibule for gear storage
- Two removable inner tents for personal space

MSRP $1,185
URL *Heimplanet.com*



16-FOOT REGATTA BELL TENT

The Regatta is a true amalgamation of functionality, versatility and affordability. It sleeps eight comfortably with sleeping bags or can accommodate three air mattresses for those who prefer a bit more comfort. Its outer shell is ultra-durable and water-repellent (fire-repellent option available), while assembly of this home away from home takes little time and minimal effort. Other features include top-grade waterproof zippers, galvanized steel pegs and poles, UV-resistant reflective rope and no-see-um bug mesh. Whether it's party time in nature, or a true backwoods adventure, the Regatta has got you covered, literally!

Specifications

- Capacity: 8 people
- Water-repellent, optional fire-repellent
- No-see-um bug mesh
- Top-grade waterproof 3-way zipper
- Polypropylene UV-resistant reflective rope

MSRP $1,000
URL *WhiteDuck Outdoors.com*

ALPHA WALL TENT 8X10

Want four-season protection from the elements in an easy-to-assemble, heavy-duty wall tent? Then the Alpha can fill your needs. This amazing shelter offers full water and fire repellent properties; PVC dipped, UV resistant bug mesh; a galvanized steel framework; and a durable polyvinyl floor—and that's just the beginning. This shelter sets up quickly and easily, and can withstand high winds, rainstorms, and just about anything else nature throws at it. With exceptional toughness and enjoyment, this tent will truly be the last tent you'll ever buy.

Specifications

- 10.10-ounce army duck cotton canvas
- Heavy-duty frame with anodized aluminum poles
- Pre-installed heat resistant silicone-coated stove jack
- Free-floating 16-ounce PVC groundsheet
- Standard bug mesh on doors and windows

MSRP $1,500
URL *WhiteDuck Outdoors.com*

BATTLE MOUNTAIN 3 TENT

It may seem like a contradiction that a four-season mountainside tent can be extremely lightweight and easy to set up, but the Battle Mountain proves that to be true. This yellow beauty protects you from the worst that nature can throw at you. From durable construction materials and UV-resistance to stability concerning temperature, moisture and wind conditions, all of the X-factors faced when camping in hostile weather environments are considered and conquered by the Battle Mountain tent. No matter what season you camp, this tent definitely wins the battle.

Specifications

- Capacity: 3 people
- Nylon ripstop tent body
- Easy set-up with color-coded webbing and poles
- All seams sealed with waterproof, solvent-free polyurethane
- Oversized stake loops for use with skis, ice axes, ski poles and more

✖ **MSRP** $900
✖ **URL** *BigAgnes.com*

GUARD STATION 8 TENT

This mountaineering dream shelter exhibits protective characteristics ideal for high-altitude, high-alpine and high-wind conditions. It can morph from a free-standing group shelter to a double-walled tent for privacy in just a few minutes, while its exoskeleton pole system ensures its stability and durability in even the harshest outdoor conditions. Additionally, six windows offer scenic views with optional venting for ideal air circulation. If you're going on an adventure in snow-covered territory, this Guard must always be by your side.

Specifications

- Capacity: 8 people
- DAC exoskeleton pole system
- Six windows for panoramic viewing
- Ceiling vents for optimal air flow
- Ready-to-pitch, with guy lines and tensioners

✖ **MSRP** $2,000
✖ **URL** *BigAgnes.com*

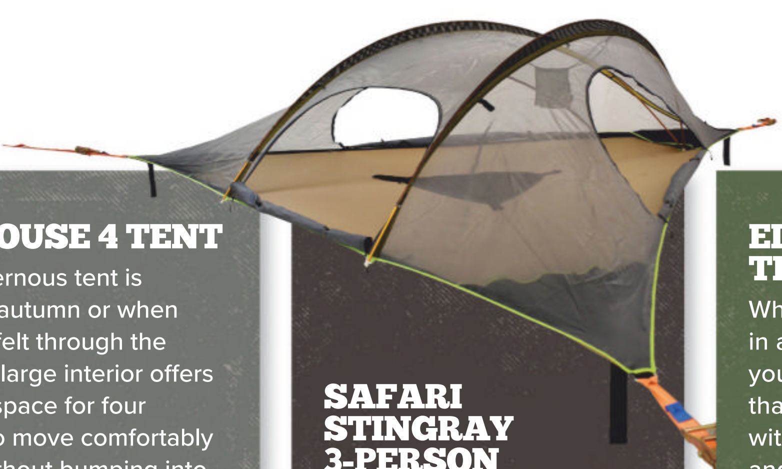
COPPER SPUR HV3 EXPEDITION TENT

This tent can handle three seasons and then some, meaning it's super tough, super protective and super spacious for three people plus their space-stealing gear. The tent's outer shell is composed of a highly durable nylon ripstop with a waterproof polyurethane-coated fly, and down below, a nylon taffeta waterproof floor. You'll also enjoy its 10 interior mesh pockets, two media pockets and pre-installed gear loft loops for stowing all types of gear. Easy-grip zipper pulls, interior guy loops, reflective guy lines and oversized stake loops round out this incredible tent package.

Specifications

- Capacity: 3 people
- Four-way high-volume hub design increases strength
- Dual zipper allows for easy entry
- Full breathable nylon body
- Media pockets with cord routing for devices cordage

✖ **MSRP** $700
✖ **URL** *BigAgnes.com*



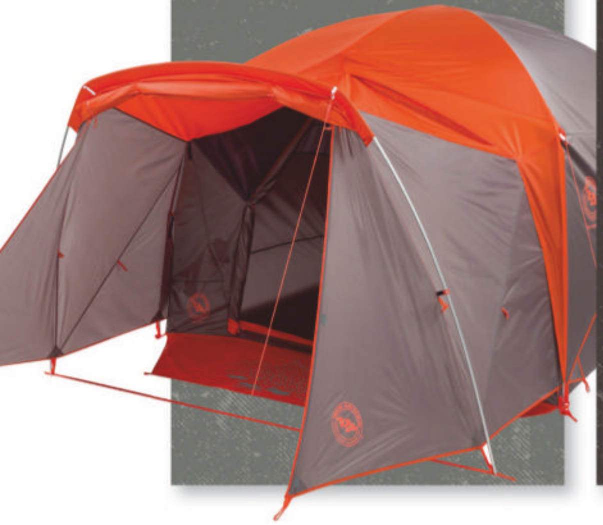
BIG HOUSE 4 TENT

This cavernous tent is ideal for autumn or when a chill is felt through the night. Its large interior offers enough space for four people to move comfortably about without bumping into each other or tripping over gear. Its two large doors feature a mesh window for excellent air circulation or full zip-up when privacy and security are a must. Additionally, this tent goes up fast, especially with possible rain in the sky, with color-coded webbing and buckles, ready-to-pitch guy lines and tensioners, and storm flaps with oversized, fast-sealing zippers.

Specifications

- Capacity: 4 people
- Large, cavernous interior for optimal space
- Two large, smooth-opening doors with mesh windows
- Color-coding webbing and buckles for easy set-up
- Reflective guy lines and reflective webbing

- **MSRP** $400
- **URL** *BigAgnes.com*



SAFARI STINGRAY 3-PERSON TENT

Cold doesn't only apply to frigid rain or snow, or bone-chilling winds. Cold can also come up through the hard ground and chill you while you sleep. The Stingray suspended tent will solve that problem and offer you a great night's rest. Its unique design offers a three-point contact on nearby trees, with quick set-up and takedown within minutes. Reinforced webbing in the floor offers stability, the totally enclosed removable rainfly keeps you dry or lets the sun in, and it offers numerous pouches and netting to store items that are both large and small. When the cold hits, elevate yourself and escape the chill!

Specifications

- Capacity: 3 people
- Three-point anchor system for ideal tension setting
- Patented anti-roll system prevents occupants and gear from shifting
- Built-in, no-see-um mesh for ultimate insect protection
- 8,000HH rainfly keeps the tent and below area completely dry

- **MSRP** $1,159
- **URL** *Tentsile.com*

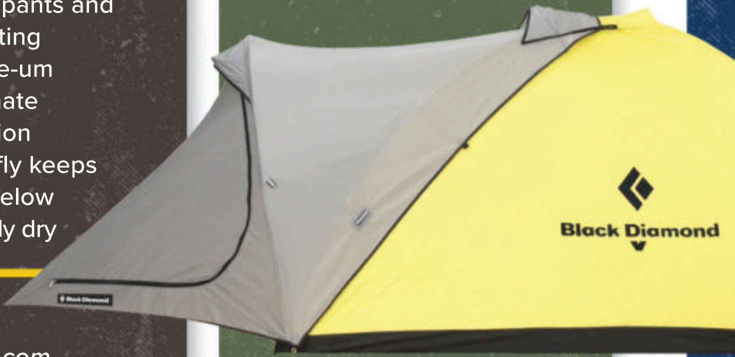
EL DORADO TENT

When hiking with a friend in any type of weather, you'll need a shelter that's fast to erect, can withstand the elements and offers plenty of room for two with accompanying gear. The El Dorado can be your savior when nature's chill turns dangerous. Two interior poles are all it takes to get this tent up and in protection mode. A durable outer shell and mesh vents keep the unit dry yet airy, without the buildup of moisture, as you sleep the night away and recharge for tomorrow's adventure.

Specifications

- Capacity: 2 people
- Two zippered vents for greater air circulation
- Large single-door entry
- Easy set-up with only two aluminum poles
- Spacious interior stores gear and equipment

- **MSRP** $900
- **URL** *BlackDiamond Equipment.com*



A FERAL BLADE

Checking out the Yasei.

BY JIM COBB

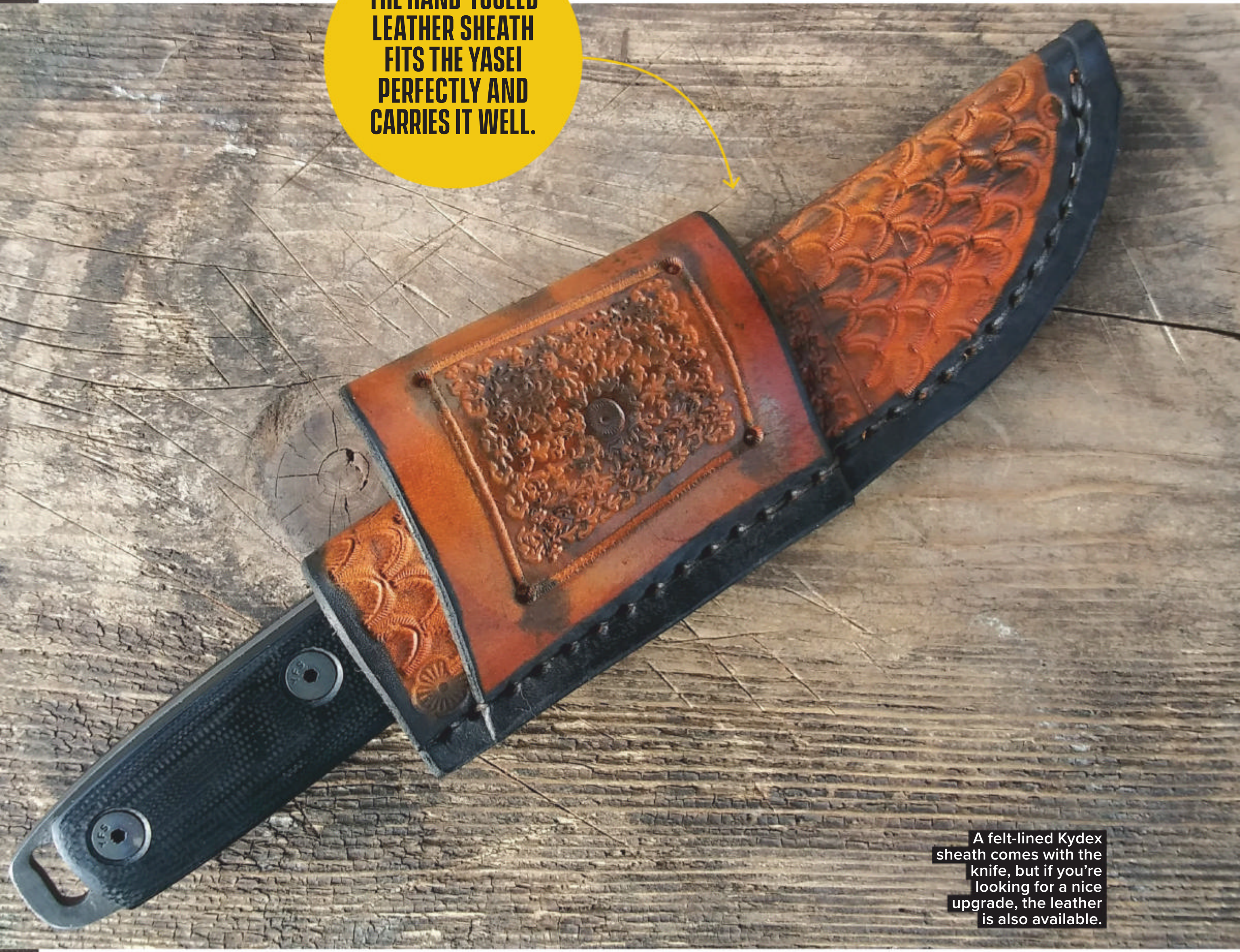
This knife is as handsome as it is functional.

DENNY FUREY IS A FULL-TIME BLADESMITH OPERATING OUT OF SPRING, TEXAS. HE OWNS AND OPERATES A CUSTOM SHOP CALLED FUREY'S URBAN COMBAT KNIVES–UNLIMITED. WE'LL LET YOU FIGURE OUT THAT ACRONYM ALL ON YOUR OWN.

Furey has a lengthy résumé that includes having served during Operations Desert Shield/Storm/Provide Comfort and the Global War on Terrorism. He spent 10 years on active duty and in the reserves with the United States Air Force Security Police/Forces. Furey also served for 20 years as a law enforcement officer, starting as a patrolman and working all of the way up to chief of police. He was the Senior SWAT commander, operator and instructor,

TECH SPECS

- **Overall Length** 9.3125 inches
- **Weight** 7.1 ounces
- **Handle** Micarta (two-tone, burlap and canvas linen)
- **MSRP** starting at $285
- **URL** *Fureysurbancombatknivesunlimited.com*



THE HAND-TOOLED LEATHER SHEATH FITS THE YASEI PERFECTLY AND CARRIES IT WELL.

A felt-lined Kydex sheath comes with the knife, but if you're looking for a nice upgrade, the leather is also available.

which included developing curriculum for edged weapons defense and application. He's also been a lifelong practitioner of the martial arts, including serving as an instructor.

In short, he knows a thing or two when it comes to edged tools, what works and what doesn't and how to design something that isn't just meant to hang on a wall.

I've been watching him from the sidelines for a while now as he'd post online about new models and designs he'd cooked up. So, when he approached me about having us review one of his knives, it didn't take much convincing.

YASEI

The knife is called a Yasei, which is Japanese for feral. The design scheme is centered on being something that can easily be carried every day and that will be able to handle just about any common knife chore, from food prep to self-defense. Nothing outlandish, just a workhorse, pure and simple.

From end to end, the Yasei measures 9.3125 inches, with the blade running about 4.75 inches. It has a straight-back blade profile, with a slight swedge. There's some oversized jimping on the spine near the handle, but nothing too aggressive. The blade is about an inch from edge to spine and is 0.625 inches thick. This model has a very nice stonewashed finish.

The handle has a deep-finger choil, which allows for fast indexing and great overall blade control. On this model the handle scales are two-tone, with brown burlap Micarta bolsters and black linen Micarta, with black G10 liners. As a custom knife maker, Furey is able to change the handle materials to whatever the client chooses. There's a good-sized lanyard hole where the tang extends out from the base of the handle. I don't often use lanyards myself, but they can definitely be useful as well as add a touch of personality to a knife.

In terms of size alone, this knife really hits the sweet spot, in my opinion. Tastes vary from person to person, but for a fixed-blade knife, I like a 4- to 5-inch blade that's thin enough to be a great slicer but still robust enough for hard use. For me, carrying around a sharpened pry bar holds no appeal.

The Yasei is no lightweight, though. It weighs in at 7.1 ounces, which is fairly heavy for a knife this size. It isn't a boat anchor, though, and the heft lends confidence that this tool is meant for real-world use and abuse.

The knife comes standard with a felt-lined Kydex sheath. However, Furey was kind enough to put together a very nice leather sheath for me. This would bring an upgrade charge if you wanted the same when you order your Yasei.

The two-tone handle scales are burlap Micarta and black linen Micarta.

THIS KNIFE IS AN EXCELLENT OPTION FOR THOSE WHO NEED A BLADE THAT WILL DO JUST ABOUT EVERYTHING.

The steel is 80CrV2, which is a great choice for this knife.

I asked Furey for more information on the design scheme for the Yasei and he said, "I tried to give it a hybrid look, a combination between a Japanese shobu blade shape and a kwaiken. I wanted to have a blade design that still reflected my style found in the other knives I've made over the years, but also provided an EDC profile that could be used as a jack-of-all-trades."

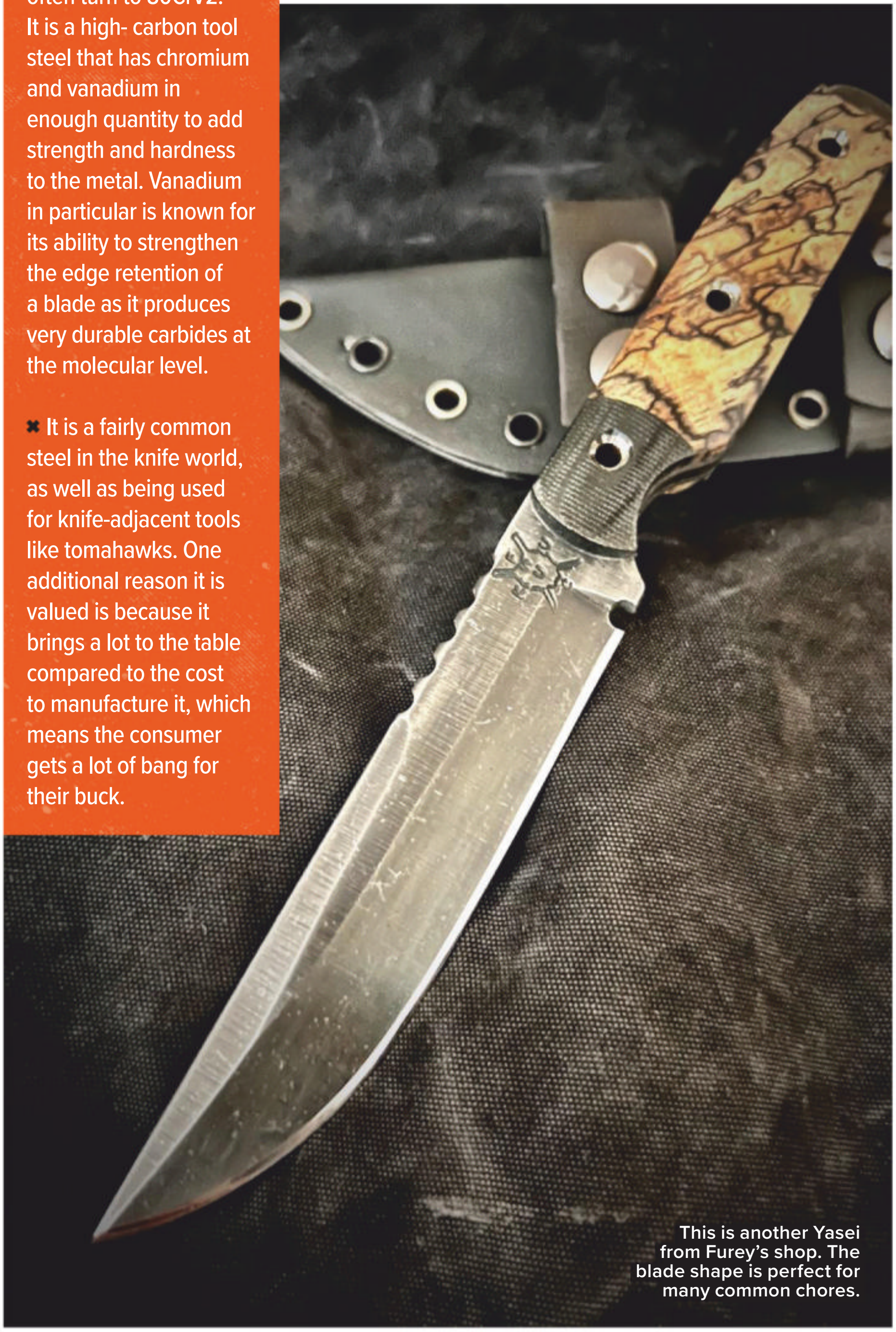
Without a doubt, I'd say he succeeded on all counts.

80CRV2 STEEL

A superior choice for knives.

- Knife makers and users who are looking for steel that's exceptionally tough with great edge retention often turn to 80CrV2. It is a high- carbon tool steel that has chromium and vanadium in enough quantity to add strength and hardness to the metal. Vanadium in particular is known for its ability to strengthen the edge retention of a blade as it produces very durable carbides at the molecular level.

- It is a fairly common steel in the knife world, as well as being used for knife-adjacent tools like tomahawks. One additional reason it is valued is because it brings a lot to the table compared to the cost to manufacture it, which means the consumer gets a lot of bang for their buck.



This is another Yasei from Furey's shop. The blade shape is perfect for many common chores.

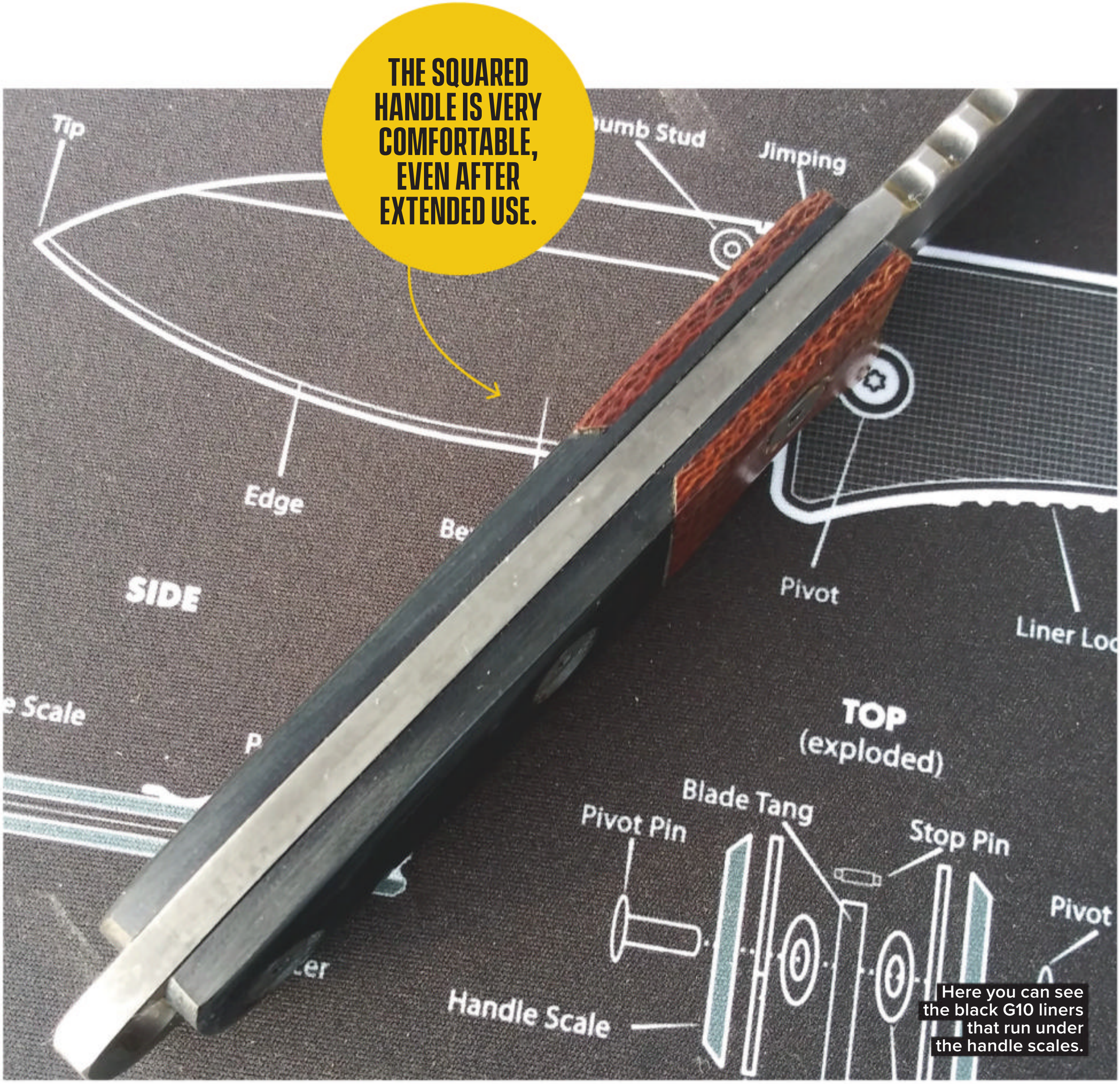
ERGONOMICS

Right off the bat, I noticed how incredibly well-balanced this knife is. The balance point is right at the finger choil. As I mentioned before, there is a bit of heft to this knife, but because it is balanced so well, it is neither top-heavy, nor does it feel awkwardly heavy in the handle.

I'll admit I was a bit concerned about the ergonomics of the handle when I first saw the knife, as the handle shape is a bit more squared off than other knives I've used. However, that fear turned out to be unfounded, as the handle is far more comfortable than I thought it would be. A good portion of that comfort is due to the deep-finger choil. It really helps to lock the handle into my hand and keep it secure.

While the handle is sort of square, the edges are all rounded, so there aren't any hot spots, which was my primary concern when I first saw the design.

The blade is razor-sharp and ready to work, right out of the box. This is always appreciated, as when I'm spending serious money on a knife, I don't feel that I should have to touch up the blade before putting it to use. The swedge narrows the tip to a sharp point, but not so fine that it feels brittle.



THE SQUARED HANDLE IS VERY COMFORTABLE, EVEN AFTER EXTENDED USE.

Here you can see the black G10 liners that run under the handle scales.

My only real complaint about this design is about the sharpening notch. The idea behind this design feature is to allow you to sharpen the entire edge of the blade more easily. Some people like them, some people don't see the need. I'm ambivalent about them, myself. The issue with the Yasei isn't that there is a notch, but rather how it is shaped. If you look closely, you'll see that the notch is sort of rounded, creating a curve d line where the notch meets the blade edge. The problem is that because it is angled in this fashion, it creates a very sharp point, one that I've somehow managed to catch myself on at least twice while using the knife. If the line of the notch coming out to the edge of the blade was straight instead of curved, I feel that this problem would be reduced, if not eliminated entirely.

PERFORMANCE

I used the Yasei for a few weeks to gauge its ability and usefulness. I tackled everything from breaking down boxes to preparing veggies for dinner. It accompanied me on trips outdoors and was used to carve wood as well as process firewood.

At every step of the way, the knife took everything I threw at it, laughed it off and came back asking for more. This is a knife that I could easily see being passed down to the next generation with nary a scratch on it, as it is just tough as nails.

For those looking for a do-it-all knife, something that can bridge the gap between bushcraft and defense and even do some kitchen detail, the Yasei is definitely a front-runner.

Backwoods Survival Guide
PRACTICAL ADVICE FOR THE SIMPLE LIFE

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